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THE
OPHTHALMIC RECORD

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A Monthly Review of the Progress of Ophthalmology.

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THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, JANUARY, 1907. VOL. XVI. NO. 1, NEW SERIES.

Original Articles.

A STATISTICAL INQUIRY AS TO THE RELIEF AND CURE OF MIGRAINE BY THE CORRECTION OF ERRORS OF REFRACTION.*

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It ought to be superfluous to present such a paper as this to the Academy, and yet it seems necessary when as recent a book as Posey & Spiller on "The Eye and Nervous System" permits unchallenged the insertion of such statements as the following:

"Originally the term ophthalmic migraine was used to bolster up a theory of the causation of the disease. This theory was that of Piorry, who held that migraine may be caused by overstrain of the iris and overstimulation of the retina. Here we have a very early statement of the theory of eye-strain, which has since been worked up to such good purpose by some specialists."

"By much the same process of logic it would be possible to prove that eye-strain is responsible for locomotor ataxia, or for cancer of the womb, or, in fact, for any disease which happens to appear in a patient who has a little astigmatism."[1]

"The treatment of migraine is entirely symptomatic and expectant. There is no specific for the disease. In our ignorance of the pathology of the affection, our treatment can be nothing more than empirical; and this fact is proved, as in all similar cases, by the large number of remedies that are recommended and even lauded in excess. From quack nostrums to spectacles the list is a dreary one and will not be repeated here."[2]

It is the repetition of such absurd statements *ad nauseam* that makes the reading of such papers as this necessary, and I beg the Academy's pardon for again thrashing out this old straw.

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* Read before the American Academy of Ophthalmology and Oto-Laryngology, September, 1906.

[1] The Eye and Nervous System, pp. 702 and 703.

[2] Ibid., pp 726-727.

I have always thought that migraine was usually an eye headache. As long ago as 1887, in *The Medical Record,*[3] I reported a case of migraine cured by the correction of an error of refraction. In 1890, in a paper read before the Section of Ophthalmology of the A. M. A. on functional nervous diseases of reflex origin, I called attention to headache and gastrointestinal disturbance as a result of eye-strain. In an address before the Cleveland Medical Society[4] in 1895, I said, "I have put first under headaches of eye-strain that of migraine, ordinary every-day sick headache. Last night, instead of writing this paper, as I ought, I spent much time trying to find something in the books about migraine. In none of the text-books could I find the eye mentioned as a cause of sick headache. They describe all sorts of ocular symptoms, of haloes, of temporary blindness, of luminapara, speak of mysterious causes, and elaborate difficult and obscure nervous conditions of hyperemia and anemia, but never suggest that the eyes may cause it.

I believe that the ordinary sick headache very frequently has its origin in eye-strain. I could recite cases by the scores of sick headache that have been cured by spectacles. Put on the glasses and the headache disappears, take them off and it returns. A school teacher here in town had headache Friday afternoon as regularly as the Friday came. She was in bed all day Saturday and often unable to go to church on Sunday. On Monday she went back to school and did the work pretty well all week, but on Friday afternoon the headache came back and incapacitated her for all mental or physical work for one, two or three days at a time. She put on a pair of glasses and she did not have a headache for two years. One day she broke her glasses; spent several hours in reading, and the next day had a sick headache. That migraine is caused by eye-strain is a fact I hope you will carry home with you."

In view of these published statements, I may be accused of being a prejudiced observer, and in so far as mental suggestion may be credited with affecting a cure I am willing to concede that I have always assured my patients that the correction of their error of refraction would almost always mitigate, if not entirely cure, their attacks.

In view of the great diversity of opinion entertained by the medical profession as to the curability of migraine by correction of errors of refraction, I thought it might be not only interesting, but profitable, to determine the question from the patient's point of view.

---

[3] A paper on "Headache and Other Reflex-nervous Troubles as the Result of Eye-strain," with six illustrative cases, Aug. 22, 1887.

[4] Reported by J. S. Cadwalader, stenographer, and published in the Cleveland Medical Gazette in November, 1895, p 78.

Every one knows how unreliable the testimony of a layman is upon medical matters, and yet there is scarcely one so dull but that he knows whether he has been cured of a migraine or not. After sending a number of test letters of inquiry, I found that I would be obliged to ask a few simple questions, and finally sent the following:

"There seems to be a question in the minds of physicians as to whether sick headache can be cured by spectacles or not. In order to gain some information on this point I have decided to write to a few of my patients who might aid me in settling this question. If you will answer the following questions and return promptly in the enclosed stamped envelope, I will greatly appreciate it:

"1. How frequently did you have attacks of sick headache before you were fitted with glasses?

"2. How frequently have you had such attacks since you were fitted with glasses?

"3. Do you have a return of sick headache if you leave off the glasses?"

The letter was sent to one hundred patients in whom I had made a diagnosis of migraine. This included all the patients who consulted me during 1902 and 1904 who were suffering from sick headache. I selected these cases primarily because only since 1902 have my records been kept in such a manner as to be readily accessible, and, secondly, because I thought two years would be long enough to determine the results of treatment.

It seems as though the first question as to the frequency of attacks would be easy to answer, and yet most of them gave indefinite answers, such as "frequently" or "very frequently." Generally speaking, however, attacks of once a month or more than once a month were tabulated as "frequently" and more than once a week as "very frequently."

I am aware that much has been written as to the difficulty of making a diagnosis of migraine, but I have had no hesitation in making such a diagnosis in all cases in which there has been periodical transient attacks of scintillating scotoma, flashes of light or hemianopsia, followed by intense headache, nausea, and vomiting. In some cases the attacks are relatively mild, lasting from four to five hours, while others are so severe as to totally incapacitate the patient for two or three days.

The statement of authors that migraine always disappears at the age of 40 or 50 has not been in accordance with my experience.

In the case of ordinary laborers, housewives and mechanics, it is true that the attacks ordinarily cease about this age. They have learned the truth of the old adage that a person is "either a fool or a doctor at 40." With advancing presbyopia they accept spectacles, choose another occupation or give up the use of the eyes and are thus relieved of eye-strain. But many professional people continue to use their eyes and consequently continue to have sick headaches and, indeed, more often find it greatly increased with the coming on of presbyopia.

There is another observation I wish to make in passing, which seems to have been entirely overlooked in the discussion of this subject, namely, *it is possible for a person with emmetropic eyes to have migraine from eye-strain;* consequently, a correction of an error of refraction may not entirely cure a patient of migraine if said patient thus continues to overwork. It must have been the experience of all of you to meet patients who have been entirely relieved of their attacks of sick headache for a number of years, and then have these same people return complaining of the old enemy and wishing a change of lenses. A careful examination shows no change of refraction. However, on inquiry the patient's habits reveal that he is doing three or four times the amount of eye work he ought to do. The only cure is less work and more play.

If you will pardon a personal reference will say that in my own case I do not have an attack once a year, yet I could bring one on within a week if I did all the reading I should like to do. I have learned my limitations—it is a case of becoming a doctor instead of a fool at 40. One of my best friends has not learned this lesson at 70 and continues to rail at the oculists because they do not cure his migraine.[5]

According to the patients' testimony, 55 cases were cured, that is, had no return of the migraine after the error of refraction was corrected. Thirty-one cases were greatly benefited and seldom had attacks, and when they came could usually be accounted for by leaving off the spectacles, excessive eye work, worry, indiscretion in eating and drinking, commencing presbyopia, etc. Of the 14 cases that were not benefited by correction of the error of refraction, 5 were cured by tenotomy of the ocular muscles (Nos. 5, 29, 45, 64 and 89), 1 was cured by the use of the pessary (No. 38), while 8 cases continued to suffer more or less severely from migraine, but all of them continued to wear glasses and said they could not do without them.

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[5] See article in the Transactions of the Ohio State Medical Association, 1904, on Migraine, by Dr. D. N. Kinsman.

RELIEF AND CURE OF MIGRAINE—TABLE OF CASES.

No.	Name.	Age.	Date of First Examination.	Occupation.	Frequency of Attacks Before.	Correction.	Frequency of Attacks After.	Return of Headache Without Glasses.
1	Miss E. G.	22	1903	Dressmaker	Frequently.	L + 1.25 = + 0.50 Ax. 90. R + 1.25 = + 0.50 Ax. 90.	After overwork	Yes.
2	Mr. W. D.	18	1903	Bookkeeper	Frequently.	L — 1.00 = + 2.50 Ax. 75. R — 0.75 = + 2.50 Ax. 180.	None	Yes.
3	Miss H. G.	18	1902	Stenographer.	Frequently.	L + 0.25 Ax. 165. R + 0.50 Ax. 15.	Quite often. Not so hard.	Yes.
4	Miss J. M	17	1897	Kindergarten teacher.	Frequently.	L + 2.00 = — 4.00 Ax. 180 R + 2.00 — 3.00 Ax. 65	Very seldom.	Yes.
5	Miss L. H.	17	1903	Student.	Once every week.	L + 0.12 Ax. 70. R + 0.25 Ax. 105	As before	Relief after tenotomy by another ophthalmologist.
6	Miss A. B.	18	1896	School teacher	Very frequently.	L + 3.00 = + 0.25 Ax. 90 R + 2.75 = + 0.25 Ax. 90	2 or 3 times in 10 years.	Yes, very soon if glasses are left off.
7	Miss M. S.	28	1903	School teacher	Very frequently.	L + 0.25 = + 1.00 Ax. 90 R + 0.25 = + 1.00 Ax. 90	None	Yes.
8	Miss F. C.	18	1889	College student.	Frequently.	L + 2.00 = + 0.75 Ax. 90 R + 0.25 = + 0.50 Ax. 165	Not often, can use eyes more.	Yes
9	Miss C. B.	46	1893	Stenographer.	Once a week.	L + 1.75 = + 0.50 Ax. 180 R + 1.75 = + 0.25 Ax. 180 Reading + 2.00 scale.	None	Yes.
10	Miss J. A.	12	1901	School girl.	Twice a week.	L + 0.25 = + 0.50 Ax. 90 R + 0.25 = + 0.50 Ax. 90	Very seldom.	Yes.
11	Mrs. J. E.	36	1899	Physician's wife.	Frequently.	L + 0.50 Ax. 105 R + 0.50 Ax. 90	None.	Yes.
12	Mrs. A. T.	31	1892	Minister's wife.	Frequently.	L + 1.25 R + 1.00 . Reading + 1 scale. Bifocal.	None.	Yes.
13	Miss N. Van O.	20	1902	College student.	Almost every day during sch'l term.	L + 1.00. R + 1.00 = + 0.25 Ax. 15	None.	Yes.
14	Miss E. M.	17	1898	High school student.	Very frequently.	L + 1.25 Ax. 105. R — 1.25 Ax. 75	Occasionally.	Yes.
15	Miss L. S.	17	1900	High school student.	Frequently.	L + 2.50 = + 0.50 Ax. 90 R + 2.50 = + 0.75 Ax. 90	Occasionally.	Yes.
16	Mrs. M. McL.	35	1901	Housewife	Once a week.	L + 1.50 = + 1.00 Ax. 90 R + 1.50 = + 1.00 Ax. 90	None.	Yes.
17	Miss N. H.	22	1903	Nurse.	Once or twice a week.	L — 0.75 = — 1.50 Ax. 65 R — 2.00 = — 0.25 Ax. 180	Once in 3 or 4 months.	Yes.
18	Mrs. W. S.	27	1903	Housewife.	Every four or five weeks.	L — 1.00 = + 4.50 Ax. 100 R + 1.75 = + 1.50 Ax. 90	About the same.	Has had iritis.
19	Miss F. B.	12	1894	School girl.	Five or six times a yr,	L — 1.00 = + 3.00 Ax. 90 R — 1.00 = + 3.00 Ax. 90	1 to 2 years betw'n attacks-	Yes.
20	Mrs. A. M.	35	1903	Housewife.	Every two weeks.	L + 0.12. R + 0.25 Ax. 80	None.	Yes, health improved. does not need glasses continually.
21	Mrs. L. F.	42	1901	Bookkeeper	Once a mo.	L + 1.75. R + 1.75 Reading + 1 scale. Bifocal.	None,	Yes, health improved, glasses for close work.
22	Miss D. G.	21	1900	College student.	Frequently.	L + 0.75. R + 0.75	None.	Yes.
23	Dr. M. H.	23	1901	Physician	Frequently.	L + 0.75 Ax. 180 R + 1.25 Ax. 180	None.	Yes. since left college only for close work.
24	Mrs. M. B. D	18	1897	Music teacher.	Frequently.	L + 1.00 = + 0.75 Ax. 95 R + 1. 25 = + 0.50 Ax. 85	None.	Yes.
25	Mrs. J. H.	24	1900	Housewife	Frequently.	L + 0.75 Ax. 90: R + 0.75 Ax. 90	Frequently.	Yes, can not do without glasses.
26	Rev. F, W.	30	1898	Clergyman	Two or three times a wk.	L + 0.50 = + 4.00 Ax. 70 R + 2.00 = + 3.00 Ax. 80	None.	Yes.
27	Miss L. G.	19	1903	College student.	Once a week.	L + 0.50. R = 0.50 = + 0.25 Ax. 90	Very seldom.	Yes.
28	Mrs. R. H.	35	1902	Physician's wife.	Twice a wk.	L + 0.75 Ax. 90. R + 0.50 = + 1.50 Ax. 105	2 attacks in 4 years.	Yes, when glasses were broken.
29	Mrs. H. H.	37	1903	Author.	Frequently.	L + 0.29 Ax. 90. R + 0.12 Ax. 105	None.	Yes, exophoria. Relief only after tenotomy. Wearing prisms fitted by ophthalmologist years ago.
30	Mrs. T. U.	37	1903	Housewife.	Frequently.	L + 5.50 = + 1.00 Ax. 135 R + 5.50 + + 0.50 Ax. 55	Once in 6 mos.	Yes.
31	Master R. B.	12	1902	School boy	Frequently when in school.	L + 0.25 = + 0.25 Ax. 125 R + 0.25 = + 0 25 Ax. 65	None.	Yes.

RELIEF AND CURE OF MIGRAINE—TABLE OF CASES—Continued.

No.	Name.	Age.	Date of First Examination	Occupation.	Frequency of Attacks Before.	Correction.	Frequency of Attacks After.	Return of Headache Without Glasses.
32	Mrs. W. S..	35	1902	Clergyman's wife.	Every three weeks since childhood.	L + 0·75 + 0.50 Ax. 90 R + 2.00 Ax. 90	Not so frequently or severe.	Yes, ophthalmophegia migraine of the neurologist ptosis of right eye; cured.
33	Rev. C. D....	27	1901	Clergyman...	Once in two weeks.	L + 0.50 Ax. 90. .. .. R 0.50 Ax. 90	None..	During past few years can do without glasses for distance.
34	Miss A. P....	14	1904	School girl....	Once in 2 to 4 weeks.	L + 1.00 = + 0.50 Ax. 90 R + 1.00 = 0.50 Ax. 90	None..........	Yes.
35	Mrs. A. ...	37	1896	Author......	Once in six weeks.	L – 1.25 Ax 75.......... R 0.75 Ax. 90 Reading + 1 scale. Bifocal.	None..........	Yes.
36	Dr. W. R.....	37	1899	Physician. .	Two or three times a mo.	L + 0.75................ R + 0.25 = + 0.25 Ax. 180 Reading 1 scale. Bifocal.	Seldom........	Yes.
37	Rev. C. B....	23	1885	Clergyman. .	One or two times a mo.	L 0.50 = + 1.00 Ax. 90 R – 0.50 = + 0.75 Ax. 90 Reading + 1 scale. Bifocal	None..........	Yes, had return of sick headaches about 40; relieved with bifocals.
38	Mrs. C. Z....	26	1899	Clergyman's wife.	Frequently..	L + 1.75 + 0.75 Ax. 80 R + 2.00 = + 1.00 Ax. 105	About same....	Subsequently got relief by wearing pessary. Continues to wear glasses constantly.
39	Mr. H. H ..	16	1900	School boy....	Frequently..	L 1.00 Ax. 90...... .. R + 1.25 Ax. 90	Seldom..... ..	Yes, sometimes has attacks after using eyes for close work.
40	Mr. W. H....	24	1897	Architect.....	Two or three times a yr.	L 0.75 + 2.25 Ax. 90. R 0.75 + 2.00 Ax. 95	About the same.	Relieved of constant headache; can not do without glasses.
41	Mr. C. S. . .	19	1891	College student.	Frequently..	L 1.25 Ax. 90......... R 0.25 = 1.50 Ax. 90	Very seldom..	Yes.
42	Mrs. B. H....	38	1892	House wife....	Frequently..	L – 1.00 2.00 Ax. 90 R – 1.00 1.75 Ax. 100 Reading + 2.50 scale. Bifocal.	None..........	Yes.
43	Miss E. G. .	17	1903	High school student.	During sch'l, once a wk.; vacation once a mo.	L + 1.25 + 0.25 Ax. 105 R + 1.25 = + 1.25 Ax. 45	3 in 3 years....	Yes. Tried it once, got sick headache in 24 hours.
44	Mrs. J. Mc. .	31	1903	Housewife.....	Once or twice a month.	L – 0.75 + 1.50 Ax. 90 R 0.75 = + 1.25 Ax. 90	Only once or twice in 3 years.	Yes.
45	Miss J. S.....	33	1895	Principal of grammar school.	Two times a month.	L + 0.75 Ax. 90.. .... R + 1.00 Ax. 170	None..........	Yes, hypophoria. No relief from migraine until tenotomy and advancement was made of rectus muscles.
46	Mr. J. F.	33	1903	Civil engineer.	Once in six weeks.	L + 2.75....... .... R + 2.75	None..........	Yes.
47	Miss E. C....	20	1903	School teacher	Once a month.	L – 0.75 = – 0.50 Ax. 180 R 0.75 = – 0.50 Ax. 180	None..........	Yes.
48	Miss M. C...	17	1893	School teacher	Two to three times a yr.	L + 0.12................ R – 0.50 Ax. 90	None....	Yes.
49	Mrs. E. B....	38	1896	Music teacher.	Two to three times a month.	L + 1.00.............. .. R + 1.00 Reading + 3 scale. Bifocal.	None....:	Yes. Had return of headache several years ago, but none since wearing bifocals.
50	Mr. E. B....	11	1899	Proof reader..	Two times a month.	L + 0.12 Ax. 90......... R 1.25 Reading + 0.12 Ax. 90 R + 0.75 bifocal.	None..........	Yes.
51	Miss G. P....	27	1895	School teacher	One time a month.	L – 0.75 = + 1.25 Ax. 90 R + 0.50 Ax. 90	None..........	Yes.
52	Dr. A. S......	21	1900	Physician. ..	Once a week.	L – 1.25 Ax. 90......... R – 1.25 Ax. 90	None..........	Yes. In college had attack Friday morning. Vacation, one in two weeks.
53	Mr. I. B......	35	1896	Superintendent.	Three or four a month.	L + 0.50 Ax. 160....... R + 0.75 Ax. 30	None..........	Yes, since glasses fitted two or three attacks when left off.

RELIEF AND CURE OF MIGRAINE—TABLE OF CASES—Continued.

No.	Name.	Age.	Date of First Examination.	Occupation.	Frequency of Attacks Before.	Correction.	Frequency of Attacks After.	Return of Headache Without Glasses.
54	Mrs. E.	30	1903	Physician's wife.	Three or four a month.	L + 0.87 R + 0.87	Once in 6 mos.	Yes.
55	Mrs. H. Y.	29	1903	Physician.	One time a week.	L + 0.50 = − 0.75 Ax. 180 R + 0.50 − 1.25 Ax. 180	None.	Yes.
56	Miss M. P.	13	1904	High school student.	One time a week.	L + 1 00 Ax. 90 R − 0.25 = − 2.25 Ax. 90	Very seldom.	Yes.
57	Mr. O. L.	33	1903	Principal of high school.	Two or three a month.	L .. 2.50. R + 2.50	Rarely.	Yes.
58	Miss K. G.	24	1901	Bookkeeper.	One in two weeks; often one a week.	L + 1.50 = + 2.25 Ax. 135 R + 1.25 = + 2.25 Ax. 60	None.	Yes, one attack in five years when glasses were broken.
59	Mr. J. McM.	29	1900	Stenographer.	Frequently.	L + 0.75 = + .25 Ax. 90 R + 0.50 = + 0.25 —x. 90	Frequently.	Continues to wear spectacles; can not do without them.
60	Mrs. P. A.	36	1894	Housewife.	Frequently.	L + 3.50 R + 3.00 Reading + 1 scale. Bifocal.	None.	Yes, return of sick he'daches with comm'ncing presbyopia. Relief by bifocals.
61	Mrs. J. A.	41	1903	Housewife.	Frequently.	L + 1.25 R + 1.50	None.	Yes. has been wearing minus cylinder lenses for many yrs.
62	Master K.	13	1903	School boy.	Once a week in school; less in vacation.	L + 1.00 Ax. 90 R + 0.25 + 0.75 Ax. 90	None.	Yes.
63	Miss L. V.	30	1901	School teacher	Frequently.	L + 0.50 Ax. 90 R + 0.25 Ax. 60	Occasionally.	
64	Miss N. V. C.	23	1903	Stenographer.	Twice a month.	L + 0.75 Ax. 90 R + 1.25 = + 0.75 Ax. 105	None.	Yes, wearing minus lenses. Refused to accept hyperopic correction until after tenotomy; received entire relief.
65	Mrs. H. M.	30	1903	School teacher	One in two or three mos.	L + 1.00 Ax. 90 R + 1.00 Ax. 90	None.	Yes.
66	Miss J. M.	17	1899	Kindargarten teacher.	One a month.	L + 2.00 = − 4.00 Ax. 180 R + 2.00 = − 3.25 Ax. 65	Once a year.	Yes.
67	Miss M. L.	27	1903	Student.	One a month.	L + 1.75 R + 1.75	None.	Yes.
68	Mrs. W. L.	39	1897	Housewife.	One a month.	L + 1.25 R + 1.25 Reading + 1 scale. Bifocal.	None.	Yes, had sick headaches when school girl; returned when about 35.
69	Miss M. K.	23	1903	Music student.	One or two times a mo	L + 2.25 = + 0.50 Ax. 90 R + 2,25 = + 0.25 Ax. 60	Once or twice a year.	Yes.
70	Mr. W. K.	27	1899	Actor.	Frequently.	L − 2.50 = + 3.00 Ax. 105 R − 1.00 Ax. 90	Occasionally.	Yes; would have no attacks, but in his profession must leave off glasses, so has occasional attacks.
71	Miss M. J.	16	1903	School girl.	Once in two years.	L + 3.00 = + 0.75 Ax. 90 R + 3.00 = .. 2.75 Ax. 60	None.	Yes, 1 attack in 3 yrs. when glasses brok'n.
72	Miss A. H.	15	1896	High school student.	One a month.	L + 0.25 Ax. 150 R + 0.25 Ax. 30	Twice a month.	Made several tenotomies, used prism exercise.
73	Miss M. H.	15	1903	High school student.	Once a week.	L + 0.25 = + 0.25 Ax. 60 R + 0.25 = + 0.25 Ax. 60	Occasionally.	Yes, obliged to give up school. No return of sick headaches.
74	Dr. A. B.	37	1895	Physician.	One a month.	L + 0.75 = 1.50 Ax. 180 R + 0.50 = − 1.00 Ax. 180 Reading + 1 scale. Bifocal.	None.	Yes, migraine since childhood until left college. Returned at 30.
75	Master J. B.	8	1902	School boy.	One or two a month.	L + 0.50 = + 0.50 Ax. 90 R + 0.25 = + 0.50 Ax. 90	None.	Yes, several attacks when glasses left off.
76	Mrs. E. E.	31	1894	Superintendent of Y. W. C. A.	Two a month.	L + 1.00 = + 0.75 Ax. 90 R + 1.00 = + 0.75 Ax. 90 Reading + 2 scale. Bifocal.	None.	Yes, bring on attack by excessive eye work or worry.
77	Rev. R. C.	28	1903	Clergyman.	One time a week.	L − 0.25 Ax. 180. R − 0.50 Ax. 180	Rarely.	Yes.
78	Mrs. F. C.	23	1904	Retouching photograp'r.	Frequently.	R + 0.50 = + 0.25 Ax. 95 R + 0.75 Ax. 90	Rarely.	Yes, wearing minus lenses.
79	Mr. A. D.	22	1895	Farmer.	Once in two months.	L + 4.50 Ax. 100 R + 1.50 = + 2.00 Ax. 80	None.	Yes.

No.	Name.	Age.	Date of First Examination	Occupation.	Frequency of Attacks Before.	Correction.	Frequency of Attacks After.	Return of Headache Without Glasses.
80	Mr. C. E....	27	1884	Principal of high school.	Once a week.	L + 0.75 Ax. 90......... R + 1.00 Ax. 90 Reading + 1 scale. Bifocal.	None...	Yes, case reported in Medical Record, '87. Numerous relatives suffer f'm migraine.
81	Miss N. D....	28	1900	School teacher	Every two weeks.	L + 2.75............... R + 3.00 = + 0.75 Ax. 75	Once or twice a year.	Yes.
82	Miss J. E....	33	1903	School teacher	Every Saturday.	L + 0.75............... R + 0.75	None..	Yes.
83	Mr. S. E....	19	1887	President of manufacturing company.	Two or three times a month.	L + 3.50.... .... R + 3.50	Once in two months.	Yes, operated for strabismus when a child, wore +2 until 4 or 5 yrs. ago when first had attacks of migraine.
84	Miss D.	14	1904	School girl. .	Two or three times a mo. dur. school.	L + 1.00: .. .. R + 1.00	None..	Yes.
85	Dr. J. F......	42	1904	Physician. ...	One a month.	L + 1.75 Ax. 95. .. .. R + 1.75 Ax. 83	None..........	Yes.
86	Sister H.....	34	1904	Teacher.......	Two or three times a mo.	L + 0.75 = + 1.25 Ax. 90 R + 1.00 = + 1.00 Ax. 90	None..........	Yes.
87	Mr. J. H.....	32	1901	Attorney..	Two or three times a mo.	L + 0.75 = 1.50 Ax. 180 R + 0.75 = 1.00 Ax. 180	Two or three times a mo.	Yes.
88	Dr. W. J.....	30	1890	Dentist........	Twice a mo.	L + 3.25 = + 1.00 Ax. 90 R + 2.00 = + 1.50 Ax. 90	Once in six months.	Yes.
89	Mr. T. B. ...	34	1894	Bookkeeper...	Once in two months.	L — 0.75 Ax. 180....... . R — 1.00 Ax. 150	None..........	Yes, tenotomy of superior rectus.
90	Sister A......	35	1902	Teacher.......	Every two weeks.	L + 2.00 = + 0.25 Ax. 90 R + 2.00 = + 0.25 Ax. 90	None..........	Yes.
91	Mrs. F. B....	20	1887	College student.	Frequently..	L — 3.00 = — 3.00 Ax. 150 R — 3.00 = — 2.00 Ax. 30	None..........	Yes.
92	Miss K. G....	21	1900	College student.	Frequently..	L + 0.70 Ax. 90......... R + 1.00 Ax. 90	None..........	Yes.
93	Mr. R. H. C.	17	1903	College student.	Once a week.	L — 2.00.. .... R — 2.00	Once in three months.	Thinks leaving off glasses would make no difference.
94	Miss P. M. ..	16	1903	High school student.	Once a week.	L + 1.00 = 0.25 Ax 90 .. R + 1.00 = 0.25 Ax. 90	None..........	Yes.
95	Sister —.....	36	1897	Superior of....	Once a mo...	L + 2.00.. ... . R + 1.00 = + 1.50 Ax. 90 Reading + 1 scale.	Once or twice a year.	Does not wear correction for distance.
96	Mr. U. B. K.	20	1900	Theological student.	Once a mo...	L — 0.25 = + 1.50 Ax. 90 R — 0.50 = + 2.00 Ax. 90	None..	Yes,
97	Miss L. J....	39	1899	Stenographer.	Frequently..	L + 0.50 = + 0.25 Ax. 90 R + 0.50 = + 0.25 Ax. 90 + 1 scale. Bifocal.	Two or three times a year.	Yes.
98	Mrs. J. B. M.	37	1895	Insurance solicitor.	Frequently..	L + 0.25 Ax. 120 .. R + 0.50 Ax. 45 + 1.75 scale. Bifocal.	None..........	Yes, migraine ret'ned, cured by bifocals.
99	Sister H.....	30	1902	Teacher.	Frequently..	L + 0.75 Ax. 90......... R + 0.75 Ax. 85	About half as frequently as before.	Yes.
100	Mrs. J. W....	30	1890	Housewife ...	Once in three months.	L + 1.00 = + 2.00 Ax. 180 R — 2.75	About the same.	

One case had iritis of both eyes (No. 18), probably specific, and should not have been included in this report. Another case (No. 72), in which several tenotomies were made, was a hysterical girl and was apparently worse than before. Still another case (No. 32) has a dilated stomach and has been greatly improved by lavage. Another case (No. 100) has had facial neuralgia, for which operation has been made from which she received some benefit.

Eighty-nine patients answered "Yes" to the third question—that there would be a return of the headache if glasses were left off, 5 patients have discarded the spectacles for distance and only wear them for near work. All the others continue to wear them for near and distant vision.

The refraction of these cases as indicated by the lenses prescribed is very suggestive as to the cause of migraine. In all cases the examination was made under a mydriatic, and in every one where relief was not obtained they were re-examined under a prolonged use of atropia. In nearly every case the total amount of latent as well as manifest ametropia was corrected. About .25 D. less for hyperopia was prescribed than that accepted by the patient in reading the "test type" so as to correct for infinity, rather than for twenty feet.[6]

Tenotomy was only performed as a last resort after prolonged efforts to strengthen the muscles by prism exercises, etc., failed.

The refraction of the 200 eyes of the 100 patients, as indicated by the lenses prescribed, were:

Hyperopia	35
Simple hyperopic astigmatism	48
Compound hyperopic astigmatism	71
Myopia	4
Simple myopic astigmatism	13
Compound myopic astigmatism	4
Mixed astigmatism	25
Total	200

A more significant observation is that of the 100 patients there was astigmatism corrected of one or both eyes in 85 cases and at oblique axis in one or both eyes in 42 cases. There was anisometropia of 1 or more D. in 15 cases.

It is to be noted in the only case of simple myopia in both eyes in which the patients suffered from migraine (No. 93) the sick headache was not benefited by a correction of the error of refraction.

It seems to me that a careful analysis of the refraction of these cases will almost force the conclusion that the predominating factor in the etiology of migraine is astigmatism, especially if at an oblique axis. Anisometropia and heterophoria are also frequent etiologic factors.

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[6] See paper by Dr. F. K. Smith, published in the Cleveland Medical Gazette, on the "Development of the Test Card," June, 1896.

Heredity has always been recognized as having an important bearing in causing migraine, but I never quite fully appreciated how much it was a family disease until I began tabulating these cases. I was able to trace seventeen cases in one family, two of which are included in this report. I think in my own family tree I could trace even a larger number. An individual with a family predisposition, an astigmatic eye and an occupation or profession requiring much close use of the eyes will very frequently suffer from sick headache.

Although no such case appears in the table submitted, I know several people with essentially emetropic eyes and almost perfect muscle balance who suffer from migraine, but in every such case there is a strong family predisposition and the patients all use the eyes excessively or it may be in some unusual manner. I have apparently cured several cases in semi-invalids by prohibiting all reading and use of the eyes for close work in a recumbent position.

That there are other causes of migraine than eye-strain no one can doubt, but that they are exceptional I firmly believe, and in conclusion can only urge that we oculists reiterate the fact that the most frequent and usual cause of migraine is eye-strain until the general practitioner comes to recognize the truth of our position.

STEREOSCOPIC CHARTS FOR HYPERPHORIA.

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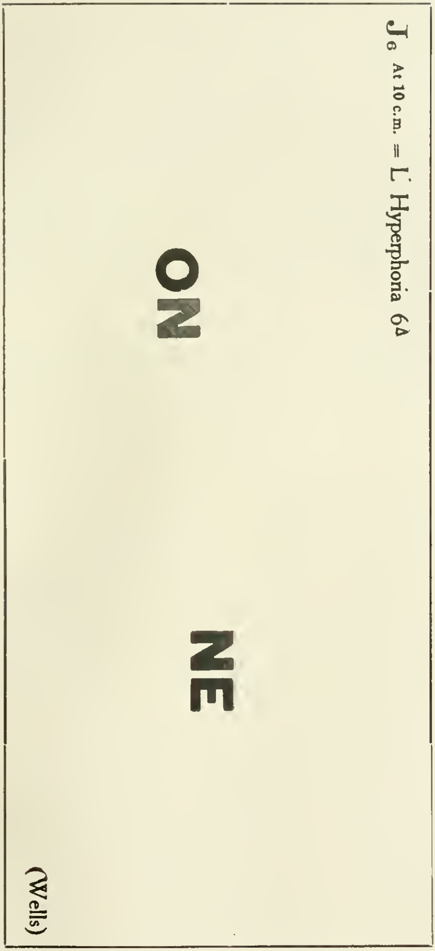
(Illustrated.)

The accompanying cut illustrates two new series which have been added to the author's "Selection of Stereoscopic Charts." Series I is for right hyperphoria. Series J is for left hyperphoria. There are five cards in each series, marked, respectively, right and left hyperphoria 2^{Δ}, 4^{Δ}, 6^{Δ}, 8^{Δ}, 10^{Δ}. For right hyperphoria the NE, which is seen by the right eye, is lowered 2, 4, 6, 8 and 10 mm. as one prism diopter corresponds approximately to one millimeter deviation at 10 cm.

For left hyperphoria the ON, which is seen by the left eye, is lowered 2, 4, 6, 8 and 10 mm. The horizontal separation of the two N's is 60 mm. on all the cards of both series.

Fusion training is frequently complicated by the existence of hyperphoria. This led Dr. Nelson M. Black to add to the Worth amblyoscope a vertical adjustment.

The writer doubts the practicability of attempting to overcome



The O and E are black and the N's red.

hyperphoria by training as a routine practice, but in certain cases it has given satisfactory results.

It is especially valuable after operations upon the superior and inferior recti to perfect the cure, and it was to meet this need that the cards have been arranged.

Extended experience will determine what value there may be in the idea, and the writer will be pleased to receive criticisms and suggestions. There is no doubt that the broken word furnishes a stronger incentive to fusion than geometric diagrams, as one's sense of propriety is offended at seeing the letters out of alignment. The adaptation of the same idea to a horizontal separation from two and one-half to eleven centimeters is under consideration. These charts are published by E. B. Meyrowitz, from whom the complete sets may be obtained.

SOME REMARKS ON THE OPERATION FOR SECONDARY CATARACT EMBEDDED IN THE VITREOUS.*

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Loss of vitreous in cataract extraction will in certain cases give us some trouble in dealing with secondary cataract. We must take into consideration, first, the size and site of the tear of the hyaloid membrane; second, the quality and quantity of the escaped vitreous; third, the condition of the remaining cortex, and, finally, whether any inflammatory processes of the iris or capsule have set in after the operation. As a matter of course, in small tears a smaller quantity of the vitreous will escape, and there is the possibility of such a tear closing spontaneously owing to capsular proliferation or to swelling of cortex in front of it. In such cases the vitreous which has entered the anterior chamber may gradually disappear, and there will be favorable conditions for performing an operation for secondary cataract. In larger tears this possibility is considerably less, unless iritic exudation leads to a kind of occlusion.

As regards the site of the tear, it seems beyond question that, for manifest reasons, the region of the fossa patellaris has a peculiar tendency to rupture. Every operator has had occasion to observe some bulging of this particular region after removal of the lens. It is decidedly the place of predilection for the hyaloid tear.

On the other hand, the site of the tear in many cases may be in the periphery. It may be assumed that this is frequently caused by an injury of the hyaloid by an instrument. In other cases tears, brought on by changes in the zonular fibers, may here and there favor a peripheral rupture of the hyaloid. It is evident that each and every giving way of the zonula need not necessarily, but may, lead to a rupture of the hyaloid. In case of a peripheral tear of the hyaloid, especially if small, a small quantity only may enter the anterior chamber, while the larger portion collects outside.

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* Paper read before the Ophthalmic Section of the New York Academy of Medicine, Dec. 17, 1906.

The conditions are different if the fossa patellaris becomes torn. In such a case, especially if the tear be large, the following characteristic picture will present itself: The anterior chamber becomes instantly very deep. If an iridectomy has been done, the pillars of the coloboma stand widely apart, and simultaneously the inferior edge of the pupil is raised. The larger the tear and the greater the vitreous quantity that has entered the anterior chamber, the more pronounced are these symptoms. In these cases there is free communication between the vitreous and anterior chamber, and cortical remnants or secondary cataract are, so to speak, embedded in vitreous substance, unless, as was pointed out above, a kind of occlusion is produced by iritic exudates.

The consistency of the vitreous is in so far of great importance as in the discission of a secondary cataract there will be even less *vis a tergo* in the liquefied vitreous of a degenerated eye than in the normally sound vitreous substance. Evidently the consistency of the cortical remnants is also very important.

Rheindorf and others always performed vitreous puncture as a routine operation, that is, after completion of the extraction and dressing of the wound he introduced the cystotome into the center of the pupillary region, tearing the fovea patellaris corresponding to the posterior capsule in order to reduce the number of secondary cataracts. He then noticed that, in view of the usual soft consistency of the cortex, the lenticular remnants easily mixed with the escaped vitreous and underwent rapid absorption. Occasionally, it is true, rapid agglutination of the anterior and posterior capsules may occlude a large quantity of cortical substance and thereby prevent absorption. If, on the other hand, there was a tough, paste-like character of the cortex to deal with—as was especially the case with cataracts of a brownish yellow or light brown color—absorption took place very slowly or not at all. Often there was a simultaneous tendency to adhesions between iris and capsule through cortical masses firmly adherent to the capsule and unmixed with vitreous substance. This always caused in the first place an irritation of the iris, and in the second place formed a bridge over which iritic vessels spread to the capsule, favoring the development of capsulitis with dense secondary cataract.

One danger in the operation of secondary cataract embedded in the vitreous and not complicated by iridocyclitic processes consists in the fact that the cataract may recede posteriorly as the knife advances or may shift with the needle or may even be partially dislodged. This danger is not very great where the vitreous humor is normal and where, as a rule, the capsule adheres to the iris at some place or other.

Another possibility is that the incisions may not gape, but it is frequently possible to push the incised capsule aside with the knife.

Finally, incarceration of the vitreous body in the wound is to be feared. This danger, however, can be averted by introducing the knife into the anterior chamber through the limbus.

I wish to differentiate between the following forms of secondary cataract embedded in vitreous:

(1) Thin secondary cataract with normal consistency of the vitreous fluid; (2) thick secondary cataract with normal consistency of the vitreous fluid; (3) thin secondary cataract with liquefied consistency of the vitreous fluid; (4) thick secondary cataract with liquefied consistency of the vitreous fluid; (5) membranous tough secondary cataract due to iridocyclitic processes with numerous and large adhesions to the iris and occasional pupillary occlusion in usually liquefied vitreous substance.

Mr. Charles B., a case of thin secondary cataract with normal consistency of vitreous body, was operated by me as follows: At the extraction, on opening the capsule, the patient forcibly expelled the lens, causing considerable escape of the vitreous. As the pupil was displaced upwards, a downward iridectomy was performed several weeks before the secondary cataract operation. An adhesion had formed between the secondary cataract and the latero-inferior edge of the iris. With a sharp, thin Graefe knife I made an incision vertically to the synechia, the incision not gaping in the least. The knife was introduced through the limbus and withdrawn without any loss of aqueous. After this a Knapp knife was likewise introduced through the limbus, the incision at right angles to the first one; at the same time the two edges of the vertical incision were pushed aside. The result was an opening sufficiently wide to increase the vision from 20/100 to 20/40.

I believe that Graefe's knife in such cases is preferable to Knapp's, especially if it is introduced through the limbus. With the Graefe knife we can make a large, clean sweep by means of one or two leverages, and the danger of displacement of the secondary cataract is, therefore, less; besides, the very sensitive knife of Knapp distinctly loses its keen edge when it is introduced through the rigid limbus. On the other hand, Knapp's knife is preferable in the second incision, because a certain turning of the instrument is necessary as the secondary cataract is pushed aside.

In a similar way I successfully operated in a case of dense secondary cataract with normal consistency of the vitreous.

I agree with Jackson, who says[1] that it is frequently possible to achieve good results with the discission—he used Knapp's knife; the method is simple and comparatively free from danger. Sometimes it is astonishing how easily apparently dense cortical opacities can be divided, whereas often thin ones, which perhaps harbor a few firm cords, offer unsurmountable difficulties. The attempt to push incised and non-gaping capsule walls aside is certainly not *always* successful.

In one case, T. A., a 22-year-old man, I made the same operation. There was a dense, glistening, white, traumatic secondary cataract. The wound hardly gaped, the capsule refused to be pushed aside, and the result of the operation was *nil*. A few weeks later I opened the anterior chamber a little and tried to catch hold with Tyrell's hook of the capsule at the spot where it had been incised, but it receded backwards before the little hook; finally a small piece of the capsule could be removed with the capsular forceps. On account of considerable loss of vitreous substance, I brought the operation to a close, and in the course of the next few weeks I was surprised to find that the thick cortex was being absorbed almost without leaving a trace. Evidently it was soft cortex which had been embedded between the anterior and posterior capsules, the tearing of the capsule had freed it and permitted the absorption.

The danger that a secondary cataract which is embedded in the vitreous, evades knife, hook or capsular forceps is, of course, much greater if the vitreous has undergone complete liquefaction, and in similar appropriate cases I should employ the method recently recommended by Kugel.[2] By means of a knee-shaped discission needle, which is held in the left hand, Kugel punctures simultaneously cornea and iris at the inner border of the cornea, or only cornea and capsule, if iridectomy was performed. The direction of the puncture is vertical. He then depresses the handle of the needle, pushing it close and parallel to the posterior surface of the diaphragm beyond the outer border of the pupil, so that the instrument, by slightly increased depression of the handle, supports the diaphragm from behind. Next he incises the secondary cataract in the usual way; or in the case of a membranous cataract which has developed from iridocyclitis he punctures it three or four times; or, again, if this does not afford a sufficient opening, he makes a circumcision, if necessary, by means of a series of small punctures before extracting it. By thus supporting the secondary cataract from behind there is also the advantage of preventing the secondary cataract from evading the knife, the hook or the capsular forceps.

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[1] Ophthalmic Record, 1905, p. 592.

[2] Arch. f. Ophth., vol. lxiii, p. 55.

By this method Kugel has achieved excellent results in iridocyclitic membranous secondary cataracts. The methods formerly practiced, iridotomy, etc., frequently lead to excessive hemorrhages which are sometimes absorbed very slowly; or they may become organized and thus occlude the recent incision. Besides, the edges may not gape. Kugel's method seems to me superior not only to iridotomy, but also to all other methods previously practiced, as, for instance, the transfixation of the capsulo-iritic diaphragm, the artificial dislocation of the secondary cataract, the double needle operation, and the discission from the sclera.

MELANOTIC FLAT SARCOMA OF THE CHORIOID, WITH UNUSUAL CLINICAL SYMPTOMS.*

G. E. de Schweinitz, M.D., and C. M. Hosmer, M.D.

PHILADELPHIA.

(Illustrated.)

The following case is reported because of certain interesting clinical features, because it illustrates the value of transillumination as a diagnostic agent and because flat sarcomas of the chorioid represent a comparatively uncommon manifestation of chorioidal growth:

Mrs. G., aged 42, housewife, came to the Dispensary for Diseases of the Eye in the Hospital of the University of Pennsylvania on March 26, 1906. There is nothing of importance in the patient's personal or family history, and her health has been reasonably good.

For one year prior to her visit to the hospital the vision of the right eye had been failing, and there had been attacks of severe pain and inflammatory reaction as follows: The first attack occurred in January, 1905, its manifestations being neuralgic pain, edema of the lid and edema of the conjunctiva localized in the outer bulbar portion, associated with injection of the conjunctival and episcleral vessels over the edematous area. The second attack took place in August, 1905, and was unusually severe, the third attack in February, 1906, and the final one just prior to the patient's entrance into the hospital. During the intervals the eye had been comparatively comfortable, although its vision had steadily declined.

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* Presented to the Ophthalmic Section of the College of Physicians, Philadelphia, Nov. 20, 1906.

Examination, R. E.—The vision of the right eye equalled hand movements at 1 meter. The outer part of the margin of the lid was slightly edematous, and the upper and outer bulbar conjunctiva injected and slightly edematous. The tension was normal. A few filamentous vitreous opacities were visible, and in the upper part of the fundus a sac-like detachment of the retina extending to the ciliary region was evident. Its greatest elevation was 16 D. The surface of the detachment was grayish-white in appearance, and it was dotted with small brown and black spots, and did not float forward into the vitreous. In the extreme lower periphery there was a second detachment, + 8 D., on which the black spots previously described were not present. In general terms, the remainder of the fundus was hazy, the retinal veins were distended, and down and in from the disc, which was fairly normal in appearance, there was a poorly defined pigment mass. The field was irregularly contracted, especially below and to the upper and outer side.

Examination, L. E.—The vision of the left eye was 6/5, the media were clear, the refraction H. and the fundus and nerve-head normal in appearance.

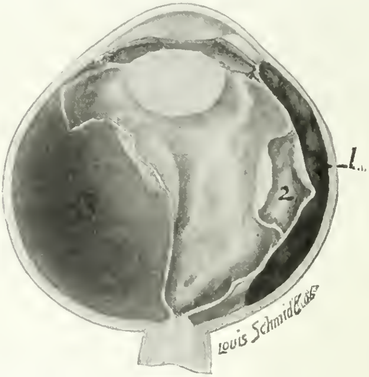
On the ophthalmoscopic appearances alone, especially by reason of black and brown spots which dotted the surface of the upper detachment of the retina, a diagnosis of sarcoma of the chorioid was justified. This was confirmed by transillumination. When the extension point of a Sachs lamp was brought in contact with the cocainized eyeball, a typical red glow appeared in the pupil space until a point in the upper ciliary region and as far back as the equator was reached, when the flow was extinguished with startling suddenness. There was no loss of the glow in the pupil when the point of the light was placed below over the region of the retinal detachment in the lower part of the fundus.

On April 11, 1906, the eyeball was enucleated, and the same effect of transillumination was demonstrated on the removed eyeball before this section, at which time a comparison of the effect of the Sachs and the Würdemann lamps was made, with apparently a slight advantage on the part of the former instrument.

The eye was bisected in the usual manner, and half of it mounted in formalin jelly and the remainder submitted to microscopic examination.

Pathologic Examination.—The gross mount shows a flat tumor, mottled, brownish to black, lying upon the inner surface of the sclera and extending from the angle of the anterior chamber to within 5 or 6 mm. of the nerve entrance. It has a thickness of 2.5 or 3 mm. There is complete retinal detachment, except as noted below (see Fig. 1).

The tumor involves the chorioid, ciliary body, extreme periphery of iris, angle of the anterior chamber and the sclera. In the latter structure the cell infiltration passes along the veins from Schlemm's canal and between a separation of its deep stroma-fibers opposite the center of the growth. The tumor consists of a densely packed central portion and a somewhat loosely arranged peripheral part. This central portion involves the entire thickness of the chorioid, and infiltrates the inner layers of the sclera and pushes forward into the supra-chorioidal space. It is composed of closely felted, stellate cells, among which, irregularly placed, are many large, irregular, pigment-bearing cells (chromatophores). Anteriorly, the structures of the chorioid, ciliary body and root of the iris have been separated by a decided lymph stasis. Along these separated strands the tumor cells have pushed, partially clothing them and leaving the spaces; in other portions these spaces are filled, giving rise to an alveolar appearance. Pigment occurs sparsely in the an-



1. Pigmented flat sarcoma.
2. Cyst of retina.
3. Detachment of retina in portion of eye opposite to position of tumor.

terior part of the growth. In the posterior portion of the tumor the same separation of the structures of the chorioid as was noted in the anterior part is evident. Here, however, the trabeculæ are more uniformly pigmented and the spaces better filled with the cells, which form short strands interlacing across the spaces.

Lying anterior to the vitreous is much finely granular matter and remains of a transudate poor in albumin, containing no cells. This surrounds the lip of iris on the side of the tumor and fills the anterior chamber; it is also seen on the posterior surface of the cornea on the opposite side and on the posterior lip of the iris on this side.

The filtration angle on the side of the tumor is occluded; on the other side there is evidence that the root of the iris has been in contact with the ligamentum pectinatum. The iris is edematous.

The retina is detached, save at the nerve entrance, and shows advanced atrophic degeneration. Overlying the tumor there is a cyst of the retina (Fig. I, 2) ; the rod and cone layer is unrecognizable, and the external nuclear layer only suggested. However, at both anterior and posterior extremities a manifest separation corresponding to the outer plexiform layer can be seen; the inner retinal layer arches a finely granular transudate mass, and the external layers are involved in a new fibrous formation overlying the tumor. The optic nerve is normal.

There are separation, irregularity and degeneration of the peripheral lamellæ of the lens, with homogeneous masses and Morgagnian corpuscles lying between. The capsule is wrinkled.

In some sections of the peripheral parts of the tumor the anterior extremity of the structure of the chorioid is well known, the connective tissue and elastic fibers outlining the different layers with fine trabeculæ of tumor cells separating the vessels. Posteriorly, in one section, a long ciliary nerve is carried far into the tumor by the latter's invasion of the sclera. The veins from Schlemm's canal are packed with tumor cells. The tumor is well supplied with thin-walled blood vessels and spaces, and, in the older part of the growth, involvement with partial occlusion of a vortex vein may be inferred. The tumor grew along the lines of least resistance, that is, in the preformed spaces along the trabeculæ of the tissues, forming a flat sarcoma, instead of the usual rounded or mushroom growth which pushes into the vitreous chamber.

Remarks.—A noteworthy feature of this case from the clinical side is that supplied by the recurring attacks of neuralgic pain, edema of the lid and localized edema of the bulbar conjunctiva with injection of the overlying superficial vessels. A closely analogous set of symptoms has been reported by Dr. Charles J. Kipp[1] in connection with a case of diffuse melanosarcoma of the chorioid. During the manifestation of this phenomenon in Dr. Kipp's patient's eye, the ocular conjunctiva adjoining the lower and outer margin of the cornea was raised in a bleb by a light yellowish fluid, and the superficial vessels were somewhat injected. The swelling extended about 1 mm. outward and was most prominent at the corneal margin; the remainder of the conjunctiva was normal. Associated with the chemosis there was pain. Whether there was also edema of the lids is not mentioned. After enucleation, a diffuse, pigmented sarcoma was found occupying the temporal half of the chorioid, which had also invaded the chorioid and extended outside of the globe.

We have seen the edema of the lid and bulbar conjunctiva as a symptom of sarcoma of the chorioid, unassociated with increased tension, and one of us (Dr. de Schweinitz) has recorded[2] a notable instance of this character, but we have not before observed exactly the set of symptoms present in the patient whose history has just been described. We did not have the opportunity of studying them during the height of the attack. As Dr. Kipp says, they probably represent a lymph stasis, attributable in part, at least, to closure of the vortex veins, which if it was not anatomically actually evident, could at least be inferred. Doubtless at times this closure, which was not constantly complete, increased, with the result described, although no simultaneous increase of intraocular tension was evident. In addition, the sections show that the filtration angle was closed on the side of the tumor, and on the other side there is evidence that the root of the iris has been in contact with the pectinate ligament. It may, therefore, be suggested that these attacks were ocular evidences of glaucoma. This evident explanation Kipp rejects because, microscopically, the anterior part of the eye of his patient was found to be normal. It is, we think, quite possible that there occur temporary adhesions of the iris base to the cornea, as well as temporary occlusion of the vortex veins sufficient to cause the attack and the edema, although finger palpation may fail to show increased tension. In our case there was ultimately permanent adhesion on the tumor side and on the opposite side evidence that just such a temporary blocking had occurred.

The value of transillumination is so well established that there is no need to elaborate this method of examination, except to urge its universal employment in all cases of retinal detachment. In our case the opportunity of testing this procedure over the space occupied by two detachments of the retina, the one covering the tumor and the other in a distant part of the fundus, afforded an excellent control examination. If strong penetration of the light is desirable, the Sachs instrument seems to be the best. Sometimes, however, the unregulated light of the Sachs lamp is too strong, that is to say, it penetrates the tumor and produces a red glow in the pupil space, as in a capital instance recently demonstrated by Dr. Marple, where, in the presence of a leucosarcoma in the upper portion of the chorioid there was no interruption by it of the rays from the Sachs lamp, but it was promptly demonstrated with the Leber apparatus. In this respect the Würdemann lamp is also very satisfactory.

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[1] Ophthalmic Record, vol. xiv, 1905, p. 271.

[2] Ophthalmic Record, xiv, 1905, p. 196.

Pursuing the subject of diagnosis a little further, it is a matter of some importance again to refer to early detachment of the retina in cases of sarcoma. In a notable paper written by J. Herbert Parsons,[3] based upon the experience of an examination of fifty cases of sarcoma of the chorioid and ciliary body, this author found that the retina may not be detached in the immediate neighborhood of the tumor, where it is simply raised by the growth, but that the detachment may be in some other portion of the eye, and the retina may be separated from the chorioid by an albuminous exudate. Every stage may be encountered, from a small, isolated tumor with a simple detachment of the retina over the lower hemisphere, to a more extensive detachment continuous with that over the growth. An excellent confirmation of these observations of Parsons was presented by a case which we demonstrated before the section last spring, in which with a leucosarcoma encroaching upon the ciliary body and at the upper and inner portion of the fundus, there was in the opposite half of the eye an irregular detachment of the retina beneath which was a conspicuous albuminous exudate. In the present case there was a second detachment of the retina at a point distant from the situation of the tumor (Fig. I, 3), while in the detached retina over the tumor a cyst had formed. The point evidently is, as Parsons concludes, that in all cases of apparently simple detachment of the retina, the most careful search for a tumor should be made by all known methods of examination.

It is hardly necessary to point out the comparative rarity of diffuse sarcomas of the chorioid as compared with the ordinary form. The subject has been so thoroughly investigated in recent times by J. Herbert Parsons,[4] Arnold Knapp[5] and others that a review of the literature is unnecessary. Parsons, in 1904, collected all of the cases on record, thirty-one in all. Since that time others have appeared in literature. One symptom is conspicuous, namely, the early onset of glaucoma, which was emphasized by Kerschbaumer. The essential characteristics of these growths, namely, their diffusely infiltrating tendency, to use the language of Parsons, is not thoroughly explained. He believes, however, that it resides in their flatness and in their endothelial origin, because it would seem that a careful examination of the cytology of most of these growths indicates that they should be classed with the endotheliomas. Apparently they spring from the lining cells of the tissue and proliferate in the spaces which they line, following these spaces in their ramifications, and are subject, again to quote Parsons' language, only to the physical conditions of resistance.

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[3] Ophthalmic Review, June, 1905.

[4] Archives of Ophthalmology, March, 1905.

[5] Archives of Ophthalmology, January, 1906.

CATARACT LID RETRACTOR AND FIXATION FORCEPS.

A. E. Prince, M.D.
SPRINGFIELD, ILL.

(Illustrated.)

I am sending you some notes which, it is my thought, may serve as a suggestion to those who are troubled with loss of vitreous in connection with the extraction of cataract.

It has been my practice for many years to remove the speculum after the corneal section and iridectomy have been completed, and substitute a small lid retractor, with which the lid is supported, and prevented from interfering with the observation and manipulation of the wound area. The instrument is provided with two fenestrated loops (Fig. 1). One is the retractor; the other extends forward beyond the retractor and serves to depress the superior flap while the cornea is being pressed upon below by means of a spoon. This manipulation combines the action of three forces.

First. The spoon forces the lens upward and tends to open the wound and evert the lower flap.

Second. The projecting loop of the instrument depresses the upper flap and still further opens the wound. At the same time, this force expended on the vitreous humor, crowds the upper part of the lens forward and encourages it to enter the wound aperture.

Third. The retracting loop carries the lid and prevents any pressure through the contraction of the fibers of the orbicularis palpebrarum from being expended on the superior surface of the globe which is the main cause of loss of vitreous.

It has recently occurred to me that this instrument might be of sufficient value to justify bringing it to the notice of your readers. Accordingly, a cut has been made by the instrument maker which will make further description unnecessary.

The forceps (Fig. 2) I commend without restraint, having used it to the exclusion of all other types of fixation forceps for two decades. The idea is borrowed from Mr. Crichett of London, who used a similar forceps, but which was not popular at the time, probably on account of not having been well constructed. I never succeeded in getting a good one until one was made for me by G. Tiemann & Co. The essential point is that the fixation ends should be so sharp that they will pierce the sclera, and so guarded that they will not perforate this structure. This is effected by an overlapping of the points against a shoulder in the opposite blade. This results in a firm hold on the sclera. Most other fixation forceps depend on the conjunctiva. A firm fixation of the sclera is essential to delicate work, such as making corneal sections and the introduction of sutures into the sclera, as in advancement operations, etc. To secure rigidity of the instrument, it is made short and of the highest tempered steel; and the latest pattern has been given a curve which facilitates grasping the sclera. To test the instrument, grasp the skin of the hand with the points separated 2 mm. The points in piercing will cross and at the same time bury themselves with scarcely any pain. The security of the hold is perfect. If this is not found to be the case, the needle points are not sharp or the curve of the points faulty. Until the merit of the instrument is established, it may be well to secure it from George Tiemann & Co. of New York or F. A. Hardy & Co. or V. Mueller & Co., Chicago.

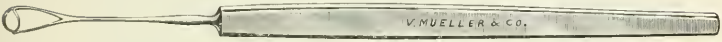


Figure 1.

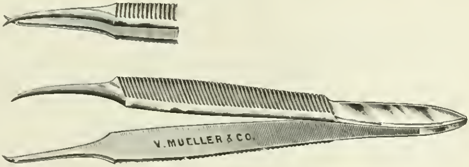


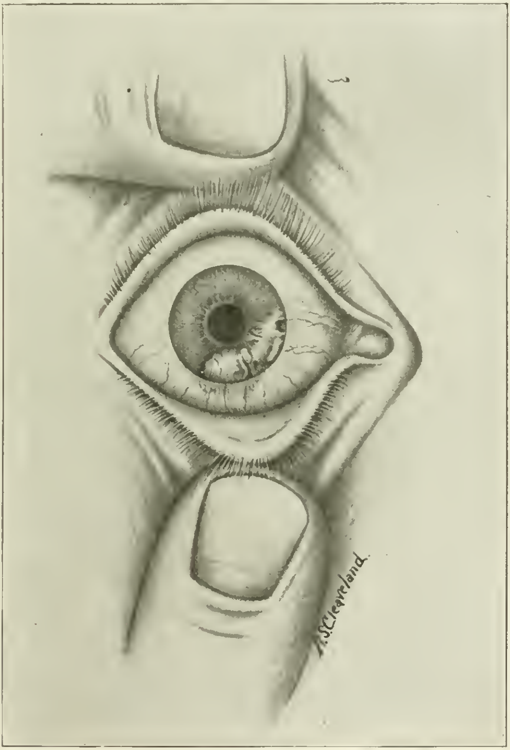
Figure 2.

CYSTICERCUS CELLULOSÆ OF THE IRIS: OPERATION, WITH PERFECT RECOVERY.

Reinhard Rembe, M.D.
City Policlinic, Department for Diseases of the Eye.
CHICAGO.

Eddie Behringer, Niles Center, Ill., an orphan, 7 years old and of healthy appearance; was never sick, excepting measles, when 3 years of age; never had trouble or any injury of his eyes. On the morning of October 1 his right eye was noticed to be red and inflamed, and within a few days became very much so. A physician was consulted, who prescribed boric acid solution. Not getting materially better, the case was referred to me.

Patient came under my observation November 8, with the following symptoms: Right eye: eyelids somewhat edematous, hyperemia of conjunctiva and subconjunctival tissue; ciliary injection, chiefly around lower quadrants of iris, which was slightly discolored and particularly of a reddish yellowish color at the internal lower quadrant, although it had not wholly lost its luster to the extent that is usually observed in a pronounced case of iritis; pupil contracted; aqueous humor slightly turbid; cornea in its whole circumference less reflecting and transparent, and a few very small precipitations on Descemet's membrane, but no hypopion. The bulbus near the ciliary region was not sensitive to pressure. At the lower half of the iris within the anterior chamber a tumefaction was distinctly noticeable; its apex corresponded to the vertical axis and extended upward within 1½ mm. of the pupillary margin and seemed to be in intimate connection with the iris and clearly surrounded by its anterior endothelial layer. The tumor extended downward in the region of the sclero-corneal margin. The whole made the appearance of a cyst, its upper part transparent, but showing an opaque yellowish body in its lower part. The growth was about 4 mm. wide and 3 mm. high in the middle, becoming constricted down to within 1 mm. of the level of the surface of the iris and continued upward and inward and very much reduced in bulk, although still involving the middle two-thirds of the radial width of the iris. The color of the iris near the tumor was changed from reddish to bluish and the constricted portion was crossed by radial bands, evidently the stromal layer of the iris. Similar bands ran abruptly up over the adjacent side of the tumor from the lower edge of the pupil for a mm. or so. *Leech-like movements in a lateral direction from the cephalic end were noticeable.* The subjective symptoms relative to pain were practically none. Photophobia and lacrimation very little. The ophthalmoscope revealed nothing that could not be better seen with the transilluminator or lateral focal illumination. Vision of R. E. counting fingers in 3 meters' distance, L. E. normal. After the instillation of atropin the iris dilated slowly and somewhat irregularly. Posterior synechiæ could be observed and the surface of the lens capsule was covered with many spots, apparently due to adhesions. On the strength of the foregoing facts and symptoms I diagnosed the tumor to be a cysticercus cellulosæ. The way the cysticercus cellulosæ reached the anterior chamber of the eye



Cysticercus Cellulosa Iridis.

may be imagined as having occurred in the following way: The family with whom the boy lives does truck farming, raising chiefly radishes, carrots, etc., and gardeners are often in the habit of using human excrements as a fertilizer. Supposing any one with a tapeworm availing himself of the same privy, should with one evacuation deposit from 30,000,000 to 40,000,000 eggs, some of these ovula scattered with the fecal matter over a field, which only a few months later would bring forth young radishes, carrots, etc., could easily be imagined to adhere to some of the bulbs. The little boy admits that he pulled the carrots out of the earth, only wiping them off a little. and ate quite a lot of them almost every day, so that in this way he probably favored the entrance of the ovula into his alimentary canal. Once in the stomach, the cell containing the embryo was dissolved by the gastric juice, and immediately the parasite, by means of its hooks, burrowed its way through the walls of the stomach and migrated until arrested at some point of resistance. On its way a blood vessel was passed, and thus the parasite entered the general circulation and was carried to any part of the body.

In our case this invasion occurred through the vessels of the iris, and the initial reaction of invasion presented the symptoms of iritis. Any parasite shows a disposition to grow and wander in the direction of least resistance. Hence, the course toward the anterior chamber was preferred. The reaction of the tissues against the parasite lodged in them is manifested by the symptoms of inflammation with proliferation of connective tissue, and during this time it surrounds itself with a capsule. and then the cysticercus is complete. This cysticercus has a cephalic bud, identical with the scolex of the future tapeworm. The stage of indolence sets in now and may give no more trouble in any other part of the human body, but in the eye it is different; sooner or later it will enter in the stage of terminal reaction and inevitably cause the destruction of the organ. At the time the case came in my hands the stage of acute iritis due to the initial reaction was waning. I treated the eye with atropin, but succeeded in dilating the pupil only a very little. This was due to the fact that the cysticercus lay within the layers of the iris. The inflammatory symptoms subsided from day to day. During this period, representing the stage of indolence, I showed the case before the Chicago Medical Society. On November 22 the inflammatory condition had almost entirely disappeared and I decided to operate on the eye. I concluded, for reasons of expediency, to make the incision of the margin of the cornea more centrally than peripherally. as I would penetrate in this direction the middle of the cyst and thus, if possible, split the sac in two. After I cut through the cornea, the keratome, contrary to all expectations, slipped by the sac, probably on account of the tough surrounding membrane of the cyst. I now proceeded as one would in an ordinary iridectomy, allowed the aqueous humor to escape and then took a capsule pincette, grasped the cyst walls, tried to extract the cyst wall *in toto,* but, as I expected, tore it; in consequence was compelled to remove the contents piece meal, possibly leaving cephalic bud remaining. The posterior part of the eyes adhered to the iris and only could have been removed by sacrificing part of it. I contented myself with picking the small fragments off the iris and succeeded without necessitating an iridectomy. The corneal wound closed perfectly. The anterior chamber restored itself quick. The eye was placed under strong atropin influence and bandaged. The operation was performed under chloroform anesthesia. The patient did well, the remaining shreds were soon absorbed, and, all in all, made a very quick recovery. Thus the eye was not only saved, but also regained practically normal vision. The case is in so far of particular interest since there are only a few similar cases on record in the medical literature of the world.

Anno 1830 Dr. Schott, of Frankfort a. M., was the first one who discovered in the anterior chamber of the eye of a living man a living hog fin and successfully removed the same by an incision through the cornea. In Oken's Isis, vol. xxxiii, p. 780, is a full report of the case. It goes on to say that Dr. Schott was so overjoyed in consequence of his discovery and success in removing the cysticercus that henceforth he took the hog fin as the emblem of immortality in his coat of arms. In 1854 Dr. A. v. Graefe discovered a cysticercus in the "dark depth of the human eye." Before closing my observation, I would like to mention that Dr. Sintzel, of Niles Center (a town of 500 inhabitants), who referred the case to me, stated that he treated this year 20 cases of tapeworm. I would also like to remark that the little boy had no visible signs of cysticerci on the surface of his body nor were there any indications that he was the host of a tapeworm. At the operation I was ably assisted by Dr. E. V. L. Brown.

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5. Arch. Ophthal., B. 30 T. 1, p. 284, vol. xxx, p. 1, 284.
6. Reynolds, D. S.: Am. Pract., 1874.
7. Berliner Klin. Wochensch., April 2, 1892, Finnen in der Vorderkammer Hirschberg.
8. La Grange, vol. i, p. 279.

SARCOMA OF THE CHORIOID.

Walter J. Gilbert, M.D.
CALAIS, MAINE.

(Illustrated.)

Sarcoma of the chorioid is so rare, being in the proportion of one to three thousand patients, that the attention of the profession is not often called to it. It is most frequent between the age of 40 and 60, but it has been known to appear as late as the eighty-fourth year. It is more common in males than females.

The growth is usually primary and generally in the form of a projecting knob, growing toward the center of the eye and presenting a neck and base. To quote from Ball: "It is rarely flat, its common form being that of a spheroid as long as the chorioidal covering is intact. Later it breaks through the lamina vitrea and assumes a spheric shape. In its growth it detaches the retina throughout a large area, but at the apex the tumor and retina are intimately attached. Following the detachment comes a stage of inflammation in which either the glaucoma or iridocyclitis is set up, the latter leading to atrophy of the eyeball. It is usually in the form of a firm tumor, but is sometimes gelatinous or may undergo fatty, myxomatous, osseous or cartilaginous degeneration."

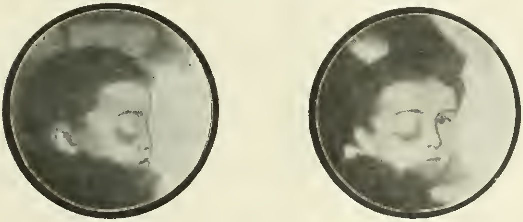
The symptoms vary much in the progress of the disease. In the first stage, lasting from one to two years, the retina is detached at the site of the tumor. The growth appears purple-red, slate color or even black, depending on how deeply pigmented. Blood vessels course over it, and the vision is affected more or less. There is no pain, and the tension is normal. This increases in the second stage and is an important point in the diagnosis of the disease.

The second stage is difficult to determine, as the external appearance of the eye resembles that found in inflammatory glaucoma. At one time its appearance is that of absolute glaucoma, and it was at this point that Ball himself was once deceived in a case. This is characterized by increased pain, which is usually very severe; the media are opaque and the episcleral vessels visible.

The first and second stages develop slowly, often covering a period of several years, while the third and fourth are rapidly reached in a few months. It does not, however, reach the extreme danger point until the third stage, as a large percentage can be saved by an early diagnosis and thorough operation; in fact, this being the only course to take. The pain at this stage is relieved by perforation of the globe, after which the sarcoma grows rapidly until it fills the orbit. It has been known to grow as large as two fists.

In the last stage the internal organs are affected by the metastatic nodules, the blood vessels carrying the cells to the different parts of the body. This feature sometimes does not appear until six months after the removal of the eye, and in the end causes death by exhaustion. If the patient survives four years after an operation there is strong probability that his life may be spared, while if untreated he could only survive about five years.

On Aug. 20, 1905, the writer was consulted by Mrs. M. relative to her little boy, who was suffering with an apparent loss of vision of the right eye. A year previous to the above date, while playing with a hay fork, one of the tines penetrated the integument about one-half inch below the margin of the lower eyelid, without apparent injury to the globe. For some time after the accident the eye was kept under close surveillance and seemingly not the slightest complication arose. During the early part of June, one year later, a marked dilatation of the pupil was noticed, and on covering the left eye the child was unable to name objects at a variety of distances. The discovery of the above condition prompted an immediate visit to an oculist, and, according to the mother's statement, a diagnosis was not made, but hot applications ordered and a prescription given for drops to be used three times daily.



Pictures taken two months after enucleation.

After listening to the above story and obtaining a firm denial of the likelihood of any hereditary specific tendency, a subjective examination revealed a total loss of vision in the right eye, while the left had a vision of 20/20. An objective examination demonstrated the absence of the well-known signs of hereditary syphilis, but the pupil of the injured eye was dilated, with marked haziness of the cornea and corresponding increase of tension—a clinical picture of absolute glaucoma.

By direct examination the writer fancied he could make out a detached retina, although mindful of the fact that eyes affected with this condition manifest a minus tension, that is, if uncomplicated, and also show no signs of permanent or progressive irritation. Up to this time there had been no pain or limitation of the movements of the eyeball.

In summarizing the above facts, I came to the conclusion that the patient had an interocular growth posterior to the retina, and informed the mother that I firmly believed all local and constitutional treatment to be out of the question and advised an immediate enucleation. This suggestion was received with a natural disapproval, and the writer informed that the parents had already decided that, if an unfavorable prognosis was given, the patient should be taken to the Massachusetts Eye and Ear Infirmary.

Three month elapsed before seeing the case again, the child being brought to my office during the latter part of November. The parents expressed much disappointment in their visit to Boston. Four prominent oculists had been consulted and the patient taken to the clinics of the infirmary. The diagnosis of each examination was interocular tumor. The manifest ocular changes, at this time, were a limitation of the excursion of the eyeball and a slight bulging of the sclerotic in the ciliary region.

During the winter and early spring frequent office examinations revealed a steady growth of the tumor. In the early part of April, when I was called to see the child, I found a marked discoloration of the sclerotic and an increased ciliary bulging; for the first time the patient complained of pain. The parents at last consented to operative interference and enucleation was performed April 11. A specimen was immediately mailed to the pathological department of the Boston University Medical College and a microscopical examination revealed a round-cell sarcoma.

In two months after the eye was removed a mass filled and protruded from the orbit. Metastases of the brain and liver began to show itself in the form of constant pain in the occipital and right hypochrondriac regions. The right lower limb refused to perform its functions and seemed to take on atrophic changes.

Four weeks the condition remained unchanged, when the stomach rebelled against all forms of solid food. During this time the protruding mass from the orbit had reached the size of a billiard ball. A liquid diet was substituted for a number of days, after which the patient refused nourishment and death came to his relief July 28.

The clinical history of the above case may seem somewhat disconnected and especially incomplete from the absence of a post-mortem examination. It has been of especial interest to the writer owing to the extreme youth of the patient, as in looking over the records I find it to be the youngest case yet reported, and one clearly demonstrating the necessity of careful histologic study of eye diseases.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

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Editorials.

THE FLAGMAN.

The etiology of many of our chronic ocular diseases is especially dark, and it is only through the association of the disease with certain physical manifestations that any light is gained. For example, the presence of persistent excess of indican in the urine is an evidence of autointoxication, and the correction of this results in a betterment in the ocular condition. Naturally we are glad to turn to and seek for so simple a cause, which, if corrected, can only be of benefit to the individual. It is certainly more rational and sensible than the empirical administration of iodid of potassium, mercury or sodium salicylate. May we not also include that some of the seeming benefit from these remedies has been largely due to their effects upon putrefaction of food in the intestinal canal?

The conditions which influence metabolic cellular activity, no doubt, are manifold and we are only acquainted with a few. Many are yet to be explained to us. Wright is just now revealing a very important one. The opsonic index of disease may prove of vast importance to the ophthalmologist. We will hope that it may serve to explain the cause of some of our ocular diseases which are not yet explained by our findings from examinations of the urine.

We might give the heart a little more consideration as a causative factor in the production of uveal, chorioidal, optic nerve and retinal disease. Dilated hearts and passive congestion are, no doubt, at the bottom of many of the lesions of the structures just mentioned.

The ophthalmologist might be called the flagman of the medical profession, because he stands at a place which enables him to see certain danger signals in the eye which indicate to him the presence of beginning constitutional disease. He is able to give the first warning of impending danger and thus save the patient from disaster.

Ophthalmologists are only just now awakening to the importance of their position. As our knowledge increases in the etiology of many ocular diseases the importance of our position increases, and we should be ever on the lookout for the danger signals in the eye.

Melville Black.

Reviews.

ON THE RELATION BETWEEN INEQUALITY OF THE PUPILS AND INEQUALITY OF REFRACTION.*

HENRI FRENKEL.

TOULOUSE.

[Reviewed by C. H. Beard, M.D., Chicago.]

This author, being unwilling to accept as a fact every statement that is made by his colleagues in ophthalmology, has made some investigations in the matter mentioned in the title. He looked up the literature of the subject and found that there was no mention of it more than 30 years ago. He divides into two camps the authors who have expressed themselves as to the question, viz.: those who affirm such a relation and those who deny it. The latter are relatively few; on the other hand, the belief in a physiologic anisocoria in conjunction with and dependent upon anisometropia he finds quite prevalent. The larger pupil, it is usually asserted, pertains to the high that has the higher refraction. From a rapid review of all these opinions Frenkel arrives at the result that, with the exception of those of three individuals, the statements are not supported by systematic research, but rather rest upon mere impressions. Moreover, the weight of the testimony of the three exceptions is adverse to the more popular impression.

For the past five years Frenkel has examined his cases carefully for differences in pupillary diameters and in refraction of the two eyes. He gives in three tables the results of his clinical observations. The first table shows 25 instances of inequality of refraction without inequality of the pupils; the second 10. of inequality of the pupils without unequal refraction and the third 10, instances of unequal pupils and unequal refraction. Needless to say that all cases of inequality of pupils and inequality of refraction in which there were other reasons for the anisocoria were omitted. In other words, only the so-called physiologic inequality is considered. The author does not admit that a difference in the visual acuity, as from corneal opacities, cuts any figure in pupillary inequality. In summing up, then, Frenkel found in about 5,000 cases only ten in which anisocoria and anisometropia were associated (0.2 per cent.). Of these ten cases, six of them had the larger pupil on the side of the greater ametropia and four on that of the lesser. The larger pupil corresponded to the higher refraction (i. e., more myopic or less hyperopic) in five cases. His conclusions are that nothing justifies the assertion that certain cases of pupillary inequality depend upon an inequality of the refraction. Nor that the larger pupil corresponds most often to the side of the greater ametropia, nor that it corresponds, with any greater frequency, to the side of greater refraction. And, finally, that there is no scientific reason for admitting any sort of relation between anisocoria and anisometropia.

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*Annales d'Oculistique, October, 1906.

SEROTHERAPY IN DIPHTHERITIC PARALYSIS OF THE ACCOMMODATION.*

E. Aubineau, M.D.

BREST.

[Reviewed by C. H. Beard, M.D., Chicago.]

This author reports a case that would seem to leave no doubt as to the positive benefit to be derived from injections of the antitoxin in certain consecutive diphtheritic parlayses. In this connection he says that it is known that in these localized paralyses there exists a remarkable relation between the seat of the diphtheritic inoculation and that of the paralysis, so that one is led to ask whether or not the disturbances of vision that follow anginous diphtheria are not due to the proximity of the superior cervical ganglion. Diphtheritic paralyses of the accommodation which accompany or follow almost always paralyses of the soft palate are characterized clinically by an integrity of the iris muscle. They recover spontaneously and their duration is variable. These two characterizations, the writer affirms, are important in that they render difficult the appreciation of the results of the trials that have been made of serotherapy. Aubineau further states that all clinicians do not admit the efficacy of the serum in diphtheritic paralyses, yet many have reported favorably upon it. Among these last he makes special mention of Comby,[1] who advises the injection of strong and repeated doses of the serum in all children with diphtheritic paralysis, regardless as to whether or not they have been already given the treatment for the original disease. The case in point is that of a girl of 18 who came with paralysis of the palate and of the accommodation (reflux of liquids through the nose, etc.) shortly following diphtheria. Here is the record:

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* Annales d'Oculistique, September, 1906.

[1] Arch. de Med., des enfants, July, 1904.

October 29, injection of 10 c.c. serum; October 30, accommodation = 3 D. Reflux has ceased.

November 2, accommodation lowered to 2 D., injection 10 c.c.; November 5, *statu quo,* injection of 10 c.c.; November 6, improvement, A. = 4 D., but soon tires; November 15, relapsing, A. = 3 D.; November 17, injection 10 c.c.; November 18, no improvement; November 22, injection of 20 c.c.; November 24, amelioration, A. = 3.5 D.; November 29, injection of 20 c.c.; November 30, patient seems cured.

December 6, another relapse, A. = 3 D.; December 8, injection of 10 c.c.; December 10, injection of 10 c.c.; December 13, injection of 10 c.c.; December 15, *statu quo,* injection of 30 c.c.; December 16, a change so favorable that patient again seems cured.

Jan. 10, 1905, another relapse, A. = 3. D., injection of 30 c.c.; January 12, no change; January 17, persuaded as to efficacy of the serum, but also convinced of the necessity for large doses, injected 60 c.c.; January 18, cure complete, and it has lasted.

Aubineau concludes from the positive amelioration of the symptoms occurring within 24 hours of the administration of the serum that there can be no doubt of its beneficial effect in the paralysis in question, but that one must not hesitate to employ the necessary dosage.

ASTIGMATIC ACCOMMODATION: A STUDY OF ITS RELATIVE FREQUENCY IN FIFTY CASES, WITH MARKED ASTHENOPIC SYMPTOMS.*

Oscar Wilkinson, A.M., M.D.

WASHINGTON, D. C.

[Reviewed by E. C. Ellett, M.D., Memphis, Tenn.]

The writer first calls attention to the scant space given to this subject in the literature, though it has been considered a probability by many since Dobrowolsky described it in 1868, but on the whole, it is a subject which is not well understood and on which our ideas are far from uniform. Two well-defined forms of astigmatic accommodation are described, namely, simple spastic and tonic. The former is exemplified by what happens if an emmetropic eye has placed in front of it a weak cylinder. We know that uncorrected astigmatism of .50 D. will, unless compensated for or overcome in some way, usually affect the visual acuity, and the fact that it does not, in the experiment under consideration, indicates that a sectional action of the ciliary muscle takes place to overcome the artificial astigmatism. Similarly we are justified in assuming that such a process takes place in astigmatic eyes in the interest of visual acuity. About 80 per cent. of those who answered circular letters sent out by the writer recognized such a condition.

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* Annals of Ophthalmology. April, 1906.

The second form of astigmatic accommodation, tonic, is the one to which the writer pays special attention. The radiating fibers of the ciliary muscle (Bowman's muscle) are at fault, and, since this muscle is supplied by the sympathetic nerve, it is not influenced by atropin. Atropin, nevertheless, will finally relax the spasm by producing such a blurring of the vision that the necessity is no longer felt for this action to improve the vision. This is the idea so ingeniously evolved by the writer, and, while it may fail to explain the situation in cases of myopic astigmatism, seems, on the whole, to be the best explanation that could be suggested.

A series of cases are reported in which the final finding under prolonged atropinization differed materially from previous finding without a mydriatic and then under homatropin. Asthenopic symptoms persisted till the final correction was given to be wrong. The writer concludes that:

1. Astigmatic accommodation in the simple form is an exceedingly common condition and is usually associated with few or no symptoms.

2. Tonic astigmatic accommodation is an exceedingly uncommon condition (five cases in fifty carefully studied cases of asthenopia) and it is always associated with marked asthenopic symptoms.

3. That no method of determining tonic astigmatic accommodation is conclusive without the use of a weak cycloplegic (homatropin), followed later by atropin and the subjective and objective tests carried out with the minutest detail. the patients being examined before while under and after the use of each mydriatic.

4. That it is probable that atropin does not relieve tonic astigmatic accommodation, *per se*, but that it does so by diminishing vision and thus removing the necessity for the astigmatic effort.

The writer makes no mention of the tilting of the lens which was formerly referred to now and then to explain the counteraction of corneal astigmatism. Since this would also mean irregular action of the ciliary muscle, it is just as well to construct a theory whereby the astigmatism is more directly and exactly counteracted, especially as this can be so well explained on neuro-anatomical grounds. The many wonderful mechanical obstacles which are overcome by the anatomical construction of our bodies and the marvelous compensatory activities and functions which one or other part may assume to counteract pathologic processes and their effects make one hesitate to assume too doubting a frame of mind in the presence of any theory more or less novel. The writer has contributed a very valuable study of a very uncommon condition.

Reports of Societies.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

A meeting of the Wills Hospital Ophthalmic Society was held at the hospital on the 22d of October, 1906, Dr. S. Lewis Ziegler presiding.

Dr. Frank Fisher reported a case of bullous keratitis, in which, after having tried various forms of treatment, he believed that it would be best to perform an iridectomy, although his experience in the past was against the procedure. Dr. Charles A. Oliver favored the operation, basing his feelings in regard to the procedure upon the good results which had been obtained by him in somwhat similar conditions. Dr. Ziegler thought that attention to the tear passages with a subsequent iridectomy would be the best line of therapy. Dr. Harold G. Goldberg stated that, in his hands, dionin in 5 per cent. strength solution had been of value in some cases which had come under his observation. Dr. Oliver said that this had also been his experience.

Dr. Fisher exhibited an interesting case of traumatism from a fragment of tool or coal which had been inflicted two weeks previously. The foreign mass had torn through the lower outer corneal edge and ciliary region of the right eye. There was a localized opacity of the crystalline lens and adjacent capsule in the wounded area. Intraocular tension was normal. The case being a new one in the hospital, it was the consensus of opinion of those present that the *x*-ray should be immediately used and attempts made, if possible, to remove the foreign mass, do an iridectomy and remove the lens, the case to be reported upon at the next stated meeting.

Dr. Oliver exhibited a curious type of traumatism in which the corneo-scleral limbus and the underlying iris had sustained a clean-cut incision from a large piece of steel that had not penetrated any farther into the eyeball. The two flaps of the wound were situated upon different planes and levels. The anterior chamber was closed. There was no reaction. The wound healed. Radiographs failed to show the presence of any foreign body in or around the eye, and the patient recovered, with the restoration of the parts to their normal position, with a scar which was only visible by strong concentration of light and high magnification. There was full vision and large uninterrupted fields. Treatment had been limited to the use of iced compresses, atropin and rest in bed.

Dr. Oliver showed a case which he had seen two hours after an accident and in which a drop of eserin had been instilled, carrying a small iris prolapse back into its normal position, and giving a round pupil, without any appearance of traumatism other than a small, slightly concentric, vertical cut through the cornea. The following day the patient reported with a localized iritis, a spongy deposit upon the anterior capsule of the lens, and a deep mass of lymph in the bottom of the anterior chamber. Vision was reduced from practically normal to light perception. The patient was immediately admitted to the hospital and placed in bed. Hot compresses were employed, and changeable iridoplegics and cycloplegics were used. All of the signs of inflammation subsided, and the patient, one week after he had been injured, recovered with full acuity of vision, two small posterior synechiæ in the position of the previously bruised iris alone remaining. He brought the case before the society to illustrate a principle which he and Dr. Fisher had established in their hospital services a number of years ago—to immediately excise all prolapses of the iris tissue, no matter how small or recent they might be. Dr. Fisher agreed with Dr. Oliver in reference to the advisability of such a procedure and had made it an unalterable rule to do this in all cases of this kind since the time mentioned.

Dr. Ziegler spoke of a case with the history that a piece of steel had been driven into the eye several years previously, cataract developing. The patient had been in the hands of a practitioner who had failed to make use of x-ray study. The moment that Dr. Ziegler saw the case he ordered radiographs to be made, with the result that a foreign body within the eyeball was recognized. The mass was immediately removed, the cataract extracted, and vision with glasses was brought almost to normal, thus proving the direct advantage of x-ray study in every suspicious case.

Dr. McCluney Radcliffe made mention of a case in which two sets of negative studies with the x-ray had been made in spite of the fact that he felt sure clinically that a foreign body was within the eyeball. A third series of plates gave an undoubted shadow with its localization. Immediate operation was resorted to, and a foreign body was successfully removed, leaving an useful and unirritated eye. The foreign body was 2 millimeters square in size. He also spoke of some rare types of traumatic cataract in which there was not any apparent external wound. In two cases that he had seen the character of traumatism was extremely slight, one being the result of the shaking of a piece of light dress goods in which a closed eye lid was struck and in which a resultant cataract was most probably caused by capsular breakage.

Dr. Oliver gave a brief account of a case that he had seen two weeks previously, in which the findings of a carefully made x-ray study coincided exactly with those from a series of examinations of the visual field; it being his rule, whenever possible, to have the field of vision gone carefully over by a competent assistant. In this instance a peripherally situated scotomatous area of positive type, sharply cut in outline, made him feel that either a small sector of the optic nerve had been injured or the adjacent retina had been seriously wounded. The foreign mass, a piece of steel some 14 millimeters in length, most accurately located by Dr. William W. Sweet, showed that its posterior extremity was protruding through the posterior portion of the eyeball some 2 millimeters to the temporal side of the globe and that it had cut the optic nerve in actual relationship with the lost portion of the field. An incision in the proper place being made, the foreign body was withdrawn upon the first essay of the magnet.

An informal discussion upon the use of iced compresses in cases of traumatism, both accidental and purposive, gave some interesting facts in regard to the first establishment of this form of practice in the hospital. Drs. Fisher, Oliver and Ziegler related some details as to their difficulty in overcoming the many objections offered to the plan that they had encountered during the introduction of a method which is now so universally employed in the hospital and which has met with so much success.

Dr. Goldberg gave a very carefully detailed account of a number of bacteriologic experiences which he had made with several different makes of cosmoline. As one of the results he had found among a great number of experiments that certain kinds of cosmoline seemed germ free. His work, pursued with alkaline, acid and neutral materials, gave findings which induced him to cover eyeballs that had been opened by traumatism with large masses of the germ-free variety of drug. As a result it is his belief that these types of material are of value in the treatment of open eye wounds, protecting them from the entrance of extraneous and harmful bacteria. He has now advanced sufficiently in the work as to make clinical studies, some of which are in active progress. Thus far he has found that healing is more perfect and much more prompt with the use of the material than it is with other methods. In a number of his cases he had noticed that the patient had experienced the taste of the drug. Dr. Ziegler made mention of the fact that he had seen the drug employed empirically by others, and that he remembered that Dr. William F. Norris formerly used it to advantage in the hospital. Dr. Oliver substantiated Dr. Ziegler's second statement, as he had often seen Dr. Norris successfully employ the then so-called refined makes of the material in many serious cases.

Dr. Ziegler gave a brief history of a case of melano-sarcoma about as large as a small bean situated at the corneo-scleral junction of the left eye of a middle-aged man in whom, six months previously, the growth appeared as a minute pigmented plaque. When the case was first seen, the patient had been advised immediate excision of the growth. At present the mass is lobulated, densely pigmented and covers one-third of the cornea. The eyeball is involved and there is considerable injection. Just beneath the principal growth there is a small, carnified, non-pigmented mass which presses into the lower lid.

Dr. Goldberg showed a number of specimens of several types of sarcomata in various stages and in different positions, giving brief histories of the same.

OPHTHALMOLIGAL SOCIETY OF THE UNITED KINGDOM.

Thursday, Dec. 13, 1906.

Priestly Smith, F.R.C.S., President, in the Chair.

Mr. E. Treacher Collins described the macroscopic and microscopic appearance of an adhesion of a persistent pupillary membrane to the cornea in the eye of a cat, and compared these with other recorded cases of a similar nature. It was suggested that they might be divided into three classes, with the following characteristics:

1. A cicatrix of a perforating ulcer of the cornea, with the pupillary membrane attached to the scar (Wintersteiner).

2. A cornea in all respects normal, except for a defect in the endothelium on its posterior surface at the seat of attachment of the pupillary membrane (Collins, Ballantyne).

3. A cornea in all respects normal, except for an absence of Descemet's membrane and its lining epithelium at the position where the substantia propria and pupillary membrane become blended (von Hippel).

The case, the subject of this communication, came under the third heading. In Class 1 the cause of the adhesion was undoubtedly inflammatory in origin. In the cases belonging to the other two classes there was an absence of all signs of past or present inflammatory changes, and in some of the eyes there were other congenital malformations which could not be inflammatory in origin.

The balance of evidence in them would seem to be strongly in favor of the abnormality being due to an arrest of development. In Class 2 the arrest occurring in the differentiation of the mesoblastic tissue posterior to the hyaline layer of Descemet's membrane into endothelium and pupillary membrane. In Class 3 the arrest occurring in the formation of a partition of the hyaline layer and the differentiation of the mesoblastic tissue between the lens and surface epithelium into two parts.

Messrs. L. V. Cargill and S. Mayou described a case of flat sarcoma of the chorioid. The patient was a man, aged 61, who was first seen in August, 1904, complaining of failure of sight of the left eye. At the outer side of the macula was a patch looking like an area of chorioido-retinitis. The retina had an edematous appearance, and at the lower border of this area were some dark chorioidal pigment spots, with other spots less pigmented; the patch was not definitely elevated, but there was a scotoma corresponding to it; the vision was 6/8. The right eye was normal.

In spite of warning, the patient did not show himself for a year, and then the retina was partially detached, with much pigment along the border of the detachment. Vision was 6/24. The use of Leber's transilluminator rendered the diagnosis of tumor certain.

The patient was not again seen until March, 1906, when he had secondary glaucoma. Tension + 2 and vision P. L.

The eye was removed and a funnel-shape detachment of the retina was present. In the outer half of the globe there was a flat, darkly-pigmented growth. In the region of the ora serrata it was raised and tended to spread in a ring-like manner. The optic nerve and sclera were not involved. The growth was strictly limited to the chorioid and was composed of spindle cells with no alveolar arrangement and a few large chromatophores. Anteriorly it showed well-marked signs of degeneration necrosis; there were also some small hemorrhages.

Dr. Cecil Shaw (Belfast) read notes of a case of perforating wound of the eyeball, with complete destruction of the iris and retention of vision. The patient was an engine driver, aged 37, who was removing the tire of a bicycle, when the wrench, which he had inserted under the edge of the tire, slipped and flew out, striking the right eye and cutting the cornea from edge to edge a little below the center. The anterior chamber was filled with blood, and when after some days this cleared off it was seen that the iris had completely disappeared, leaving the lens in place, but evidently injured at its lower edge from which a few opacities spread through its lower third. These showed no tendency to increase. The wrench was a particularly sharp and rough edged one, and probably caught the iris and tore it out. All signs of irritation passed off in about a month, but some floating opacities remained in the vitreous. The man was able to return to his work in six weeks. with vision of 6/18 and 6/12, partly, in the injured eye.

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of Nov. 17. 1906, in Denver.

Dr. William C. Bane, Presiding.

TRACHOMA OR VERNAL CONJUNCTIVITIS?

Dr. Edward Jackson presented a boy of 9 years with a condition of the ocular surface of the upper lids resembling both trachoma and vernal conjunctivitis. The granulations were rather flattened. There was neither corneal involvement nor purulent discharge, points against the probability of trachoma. There was a history that the lids had been rolled 18 months before. Subsequent examination showed the case to be one of trachoma. Dr. Bane showed this case before the society Feb. 18, 1905 (see OPHTHALMIC RECORD, May, 1905, p. 246).

Discussion.—Dr. Neeper reported a similar case, requiring three treatments a week for about three months, which he considered was not trachoma.

Dr. Strader had observed that one rolling or excission was often insufficient.

Dr. Conant cited a case with a few granulations on the ball near the caruncles and on the retrotarsal folds, but not many on the tarsus.

Dr. Walker advocated Grady's forceps for expressing granulations near the caruncles.

DETACHMENT OF THE RETINA.

Dr. Bane presented a woman of 70 years whom he had refracted July 2, 1904, getting R. V. = 6/12 +, L. V. = 6/6. Oct. 25, 1906, she came, complaining that R. V. had failed two days previously after an exposure of three hours to sunlight reflected from the snow. She first noticed a purple spot in the nasal field of the right eye that changed to black and then the edges assumed a greenish tint. Vision was indistinct in upper outer field of this eye, the rest of the field being dark. Ophthalmoscopic examination showed a distinct nodular detachment of the retina extending almost to the center of the vitreous from the temporal side. No floating movement could be detected. The nodular appearance of the mass, without movement, suggested a sarcomatous growth. The patient was given increasing doses of iodid of potassium, gr. v to xv t. i. d. On November 4 the dull gray appearance of the retina had disappeared, and in its place a corrugated retina, the fluid having in great part been absorbed. The field had increased 30° to the nasal side of the median line. On November 13 the field was nearly normal for a large object. The iodid was continued. A subconjunctival injection of physiologic salt solution was given. Examination two weeks later showed the retina to be fairly well reattached. Some horizontal corrugations were still to be seen.

RETINO-CHORIOIDITIS.

The special subject assigned was now discussed.

Dr. Jackson reported a case of chorioiditis in a young woman under observation, probably of tubercular causation, in which no pigmentation had yet occurred. He said that tubercular chorioiditis arose in acute miliary tuberculosis and was probably as rare in Denver as in any city of its size. He had never seen chorioidal disease in persons dying from chronic tuberculosis, but had seen two cases of probable isolated tubercles of the chorioid.

Dr. Walker raised the question of tuberculosis affecting the chorioid and spoke of a woman with poor vision in one eye, in which yellow spots were scattered over the retina. Dr. Jackson said that chorioidal disease nearly always involved the retina, but that typical chorio-retinitis was nearly always associated with syphilis.

Dr. Friedmann had seen two cases of tubercle of the iris, with chorioditis.

Dr. Stevens quoted Fournier's latest statistics, which showed 86 per cent. of syphilitic infection transmitted in the first year of marriage, but that may arise from mucous patches and skin rashes as late as thirty years. He said that about 87 cases of tubercular conjunctivitis had been reported; that he had never seen tubercular chorioiditis, and that it was very rare, which was the general opinion of the society. He had been amazed to see to what extent gross changes of chorioiditis and retinitis would repair, leaving scarcely a trace of disturbance, and mentioned a case of retinitis circinata in which the retina cleared and vision was fully restored. He also spoke of a case of traumatic retino-chorioiditis, with an area of 4 or 5 disc diameters of exudate, with pigmented border, all of which disappeared, and said he had observed many like cases.

Dr. Jackson reported three cases of weakness of the depressor muscles, probably *paresis of the superior oblique,* two being caused by syphilis contracted twenty years before. Under potassium iodid they were showing rapid improvement. With no history of traumatism, paralysis of the superior oblique was a strong indication of syphilis.

Dr. E. R. Neeper reported a case of *heterophoria* corrected by 15° prism, base down, and 6°, base out, supposedly not syphilitic. In discussion Dr. Jackson advised operation if the condition proved permanent.

Dr. G. H. Strader reported a case of *uveitis* which had recently consulted him, with slight iritis, marked hyalitis, chorioidal yellow spots on the nasal side of the disc, vitreous "full of opacities," very little pain, vision = fingers at 2 feet, and the so-called bilious state. A similar attack had occurred two years previous, following gonorrhea, and the general health had not been recovered. The family physician was positive of the absence of syphilis, although there was a rash on the chest, and the hair fell out to a considerable extent. There was no enlargement of glands.

Potassium iodid, gr. xv t. i. d., was given. On the second day fearful eyeache and headache supervened. Reducing the dose and later discontinuance of the drug caused no relief.

Nasal examination showed pus coming from either the ethmoidal or sphenoidal cells, or both. This was removed by a suction apparatus, with immediate relief of ocular and frontal pain and early clearing of the vitreous and chorioid. Dr. Strader also reported another case of drainage of pus from the same source, with increase of V. from 20/200 to 20/70, cure of a drug habit and gain of 25 pounds. Dr. G. F. Libby reported three cases: (1) a recent acute diffuse nephritis in a young woman of 20 who had had *interstitial keratitis of each eye and iritis* of the right eye, with adhesions, at 15. Her father had died of syphilis. The family physician reported, as among the first of the nephritic symptoms, dimness of vision and dilated left pupil (the right being bound down by synechiæ), edema of the feet and ankles, and 6 grams of albumin to 1,000. After a few weeks of appropriate treatment the edema subsided, the urine showed $\frac{1}{4}$ gram of albumin to 1,000, the left pupil was still dilated, but vision, accommodation and the fundus of each eye remained unchanged.

(2) *Interstitial keratitis* of both eyes in a child of 4 years, with complete notes since the mother's primary infection, 8½ years before. The mother discovered that she had syphilis three years before her present marriage. She suffered from rash and sore throat only, for antisyphilitic treatment was at once instituted and kept up continuously for three years. Then the medication was discontinued

for one year, when, finding she was pregnant, she resumed treatment for six months. The child had snuffles for 6 months after birth. As the family physician advised her to nurse the child, she took another course of treatment for 9 months. In the sixth week eczematous patches showed on the child's neck. Inunctions of mercury were used on the child for one month, when these patches disappeared and no skin affection has since shown. In July, 1906, at 4 years, the child had developed interstitial keratitis. This was cured in two months as far as the inflammation went, and in two months more all corneal opacity, except a few faint maculæ, had disappeared under dionin and yellow ointment applications.

(3) *Neuroretinitis albuminurica* in a man, aged 26 years, suffering from chronic parenchymatous nephritis. Nine months before his ankles had become edematous, followed by facial edema and headaches, all being relieved by medication. About July 25, 1906, failing vision, especially in the right, and lessened accommodation was noticed, with frontal headache and nausea at times. On September 5, when he came for examination, R. V. = 1/45, L. V. = 4/22; the discs were red, raised and obscure; there were white spots about the maculæ and white patches near the discs, and both pupils were widely dilated. On September 13 R. V. = 2/45, L. V. = 4/22, the discs were choked, there were flame-shaped hemorrhages on the discs and retinæ, the R. macula was surrounded by a circle of white dots and the left by striæ to one-half its extent. October 2 R. V. = 4/22, L. V. = 4/15, fundus slightly improved, blood pressure 185. October 17 R. V. = 4/15, L. V. = 4/45, L. fundus worse, blood pressure 200. The patient had not again reported on account of a slight attack of pneumonia, followed by weakness and decreased vision.

George F. Libby, *Secretary.*

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting Nov. 20, 1906.

Dr. G. E. de Schweinitz, Chairman, Presiding.

A REVIEW OF THE TREATMENT AND ITS RESULTS OF ONE HUNDRED AND TWENTY-NINE CASES OF GONOCOCCIC CONJUNCTIVITIS IN ADULTS AND INFANTS IN THE PHILADELPHIA GENERAL HOSPITAL DURING THE PAST SIX YEARS

was read by Dr. T. B. Holloway. He presented a statistical study of 129 cases of gonococcic conjunctivitis which had occurred in the services of the attending ophthalmic surgeons of the Philadelphia

General Hospital during the past six years. Seventy-two cases, or 106 eyes, presented gonococcic conjunctivitis, and 27 cases, or 109 eyes, conjunctivitis neonatorum. Dr. Holloway described the bacteriologic tests, the condition of the cornea on entrance, and the ultimate vision secured in these various cases, and also made a study of the cases of gonoblennorrhea which have occurred in young children in the same institution during the same period of time. Particular attention was paid to the method of treatment which had been used, and it was found that, among those cases of gonococcic conjunctivitis in which the corneas were clear when the patients entered the hospital, nitrate of silver was employed in 31 cases, with subsequent corneal involvement in 8, or 25.8 per cent., argyrol in 20, with corneal involvement in 4, or 20 per cent.; protargol in 4, with no subsequent changes; nitrate of silver and argyrol in 6, with corneal involvement in 2, or 33 1/3 per cent. Among the cases of conjunctivitis neonatorum, 95 eyes were free from corneal involvement upon admission, and only 11 of these developed corneal changes while under observation. Fifty of these eyes were treated with nitrate of silver, with subsequent corneal involvement in 6, or 12 per cent.; 14 were treated with argyrol, with subsequent corneal involvement in 1, or 7.14 per cent.; 16 with nitrate of silver and argyrol, with subsequent corneal involvement in 2, or 12.5 per cent. In 13 eyes no silver preparation was used, and none of these developed any abnormality of the cornea. All of the attending surgeons preferred nitrate of silver in gonococcic conjunctivitis, and in the majority of the severe infections the silver salt was used. The elaborate statistical material which comprised the paper can not be presented in an abstract, and only a few of the main points are, therefore, recited.

Dr. Pyle called attention to the value of solutions of acetozone and alphazone in purulent conjunctivitis. He had used the latter with success in the strength of 1:500 as an application and in the strength of 1:2500 as a collyrium.

Dr. Hansell complimented Dr. Holloway for his careful collection of statistics and the manner in which he had presented them. He thought that in comparing the results of treatment at Blockley with those of other institutions the character of the patients should be considered. As a rule, those in Blockley were in a poor physical condition, and in children especially this had an important bearing upon the results which could be obtained. In answer to a question, Dr. Hansell said that he always used solutions of potassium permanganate, and made applications of silver nitrate in the cases under his care.

Dr. Posey discussed the subject of vulvovaginitis in little girls and its importance in causing infection of other children. At one time during the past summer the wards of the Children's Hospital had to be closed because of an epidemic of this disease. He emphasized also Dr. Holloway's point on the occurrence of arthritis after gonorrheal conjunctivitis.

Dr. de Schweinitz, referring to Dr. Holloway's statement that there had occurred in the Philadelphia General Hospital a little over 2.1 per cent. of ophthalmia neonatorum among more than one thousand deliveries, stated that it must be remembered that these deliveries were not in one service, and that all of the chiefs on duty were not in the habit of using Credé's method. Where Credé's method was used the percentage of ophthalmia neonatorum was much lower in this hospital. While he believed that Credé's method was essential in all cases in which the birth canal was known to be infected, or from which the suspicion of infection could not positively be eliminated prior to the birth, it was not necessary when infection or the suspicion of infection could be excluded. Under these circumstances milder measures were much preferable.

Dr. de Schweinitz fully indorsed the value of scarification of the hard ring of conjunctival edema which was apt to surround the corneas of cases of gonorrheal conjunctivitis in adults, and referred to Dr. Robert Randolph's observations as to the advantage of this procedure. He also indorsed the use of cold in suitable cases, provided there was no depreciation of the general nutrition, at least for the first thirty-six hours, not in every case of ophthalmia neonatorum, but in almost all cases of gonorrheal conjunctivitis of adults. He thought, however, that a good deal of experience was necessary to decide whether or not cold should be used. Often in ophthalmia neonatorum of infants it was not necessary.

He reiterated his previously expressed belief that no remedy had thus far been discovered which could replace in value properly applied nitrate of silver in the treatment of gonorrheal conjunctivitis of adults. He insisted, however, upon a correct technic, and fully realized the disadvantages which surrounded this excellent remedy. Inasmuch as abundant investigation had demonstrated that argyrol was either entirely or practically without any bactericidal qualities, the advantages claimed for this drug in the treatment of purulent conjunctivitis could not reside in any action that it had upon the micro-organisms, but as it is a bland remedy and by its use the secretion in the deeper folds of the conjunctiva is floated to the surface and more readily removed, it is of service, and as an adjuvant to the nitrate of silver is a useful remedy. It must be used in fresh solution, and the surface of the conjunctiva kept bathed in the fluid, especially as recommended by Dr. Bruns, of New Orleans, and Dr. Standish, of Boston. That it could not replace nitrate of silver, however, he thought was abundantly demonstrated, certainly in his own experience and in that of his colleagues in the Philadelphia General Hospital.

Dr. de Schweinitz continued to be impressed with the value of permanganate of potassium as an irrigating fluid in cases of gonorrheal conjunctivitis of adults, although he did not use this remedy in ophthalmia neonatorum, which under ordinary circumstances is readily managed by milder applications, and it is particularly in this disease that argyrol and similar drugs are of service, largely because they are unirritating. Nitrate of silver, however, even in these cases, if any are gonorrheal in origin, is frequently essential.

Dr. Risley said that his views agreed entirely with those which Dr. de Schweinitz had expressed. He believes that silver nitrate is the most reliable drug in the treatment of gonococcic conjunctivitis, and that much harm has been done in neglecting its use. At the same time he recognizes that its careless application is a source of danger. In the use of cold, he varies the treatment according to the physical condition of the patient, using it when the patient is robust, but preferring hot applications in cachectic individuals.

SOME UNUSUAL OCULAR MANIFESTATIONS OF GONORRHEA.

Dr. Wm. Campbell Posey read this paper and illustrated the subject by two cases. Case 1 was that of a healthy young adult who was a sufferer from urethral gonorrhea. General infection as indicated by articular rheumatism. Involvement of sphenoidal cells with gonococci in the discharge. A week later gonorrheal conjunctivitis in both eyes, apparently from continuity of tissue from the sinus cells. Disappearance of ocular and nasal symptoms under treatment, but after a short period reappearance of both conditions with the added element of a typical superficial punctate keratitis in both eyes. Cure after a month of inflammation. Three months of absence of ocular signs, followed by a double iritis with a fresh outbreak of rheumatism while taking baths for rheumatism. Disappearance of symptoms for two weeks after a month of treatment, followed by intense iridocyclitis in the left eye.

Dr. Posey believed that the primary lesion had been an involvement of the mucous membrane of the nose, by direct infection through the fingers. He called attention to the rarity of gonorrheal inflammation of the mucous membrane of the nose, and believed that the case was unique as an example of a purulent conjunctivitis as a consequence of purulent rhinitis. He thought the punctate keratitis which occurred during the second attack of conjunctivitis, as well as the iridocyclitis which developed later, to be due to infection by toxins which had been generated in the system by the gonococci.

The second case was an instance of metastatic conjunctivitis, occurring in a young man with specific urethritis and gonorrheal rheumatism. The inflammation took the form of a catarrhal conjunctivitis. No gonococci were found in the conjunctival secretion, but the *Bacillus coli communis* was seen in pure culture. Dr. Posey commented upon the rarity with which metastatic conjunctivitis is recognized by ophthalmologists; he spoke of the history of the affection, stating that this form of conjunctivitis had been recognized for many years, but that after the discovery that conjunctivitis might be originated by direct infection, the possibility of an inflammation in the mucous membrane of the eye from pure metastasis had been denied, and that it had only been within comparatively recent years that writers had described cases which placed the identity of the affection beyond question.

He thought it not odd that conjunctivitis should arise in gonorrheal cases from metastasis, if cognizance is taken of how often the ocular mucous membranes, in common with other mucous membranes, constitute an avenue of escape for abnormal and toxic fluids.

He said that, as a rule, gonococci were not found in the conjunctival secretion in metastatic conjunctivitis, and that when these micro-organisms were found it indicated a peculiarly virulent character of inflammation. He pointed out that Van Moll had found staphylococci in the secretion, which were thought by this author to indicate a general toxemia by that organism. as a product of urethritis.

Both eyes are usually involved, the disease frequently passing from one eye to the other. As a rule, the symptoms are those of a mild, subacute attack of conjunctivitis. In others, however, the inflammation may be so great as to suggest a direct infection of the conjunctiva. Relapses are common, but the tendency is to final but slow cure. Gonorrheal rheumatism is usually coexistent, but not necessarily so.

Treatment should consist in cleanliness with astringents, which should be varied in character and strength to meet the varied degrees of inflammation, and in the combating of the urethritis and general toxemia by appropriate remedies.

Dr. de Schweinitz, referring to Dr. Posey's first case, thought it interesting that the infection had apparently proceeded from the inflamed sphenoidal sinus to the conjunctival sac. The reverse, namely, that a gonorrheal infection passes from the conjunctiva into the lacrimal sac, or more deeply into the nose, appears to be most uncommon. He had seen very deep-seated infection of the orbit under these circumstances, and referred to Suker's case of infection of the anterior ethmoidal cells, which began with an apparent orbital cellulitis on the fourth day after the onset of the conjunctivitis, and which required opening and draining of the ethmoidal cells for its relief. He thought that certain statistics as to the frequency of gonorrheal conjunctivitis as a complication of urethral gonorrhea were inaccurate, and that the disease was more frequent than many genito-urinary surgeons were inclined to believe, doubtless because they did not see the cases of gonorrheal conjunctivitis, as they were more apt to occur in those who neglected their gonorrheas, and did not seek relief for their urethral affection, and, therefore, were not included in statistical tables.

Dr. Pyle called attention to the reported cases of arthritis following gonorrheal infection of the conjunctiva. Dr. Shumway thought that the infection of the eyes in Dr. Posey's first case was more likely due to infection by the fingers, as the experiments of Bach and Hauenschild had seemed to show that organisms do not pass from the nasal chambers to the eye through the lacrimal passages, although their passage from the conjunctival sac to the nostrils in conjunctivitis was constant.

Dr. Posey, in conclusion, said that the infection on each occasion started apparently in the immediate vicinity of the canaliculi, and indicated, he thought, an infection through the lacrimal canal, and not by the fingers. He believed that gonorrhea would be more often found to be the cause of mild types of conjunctivitis, and of iritis, if the histories were carefully investigated.

PARINAUD'S CONJUNCTIVITIS.

Dr. Frederick Krauss read a report on two cases and exhibited one case. The first occurred in a 12-year-old boy, the left eye being affected. The conjunctiva showed numerous granulomata in the retrotarsal folds, especially of the upper lid. The swelling of the preauricular and inframaxillary glands disappeared without abscess after six weeks, at which time the conjunctiva was again smooth. The second case was in a 10-year-old girl. The left eye presented one large granuloma and numerous smaller ones in the upper lid. Fluctuation appeared in the greatly enlarged preauricular glands after four weeks, and puncture was necessary. There was also involvement of the inframaxillary and retromaxillary and the post-cervical glands. The granulomata disappeared by necrosis of the superficial layers and gradual absorption of the deeper portions. There was a history of association with horses in both instances. Treatment consisted in cleansing with boric acid solution, the use of 25 per cent. solution of argyrol every four hours, and nitrate of silver (10-grain solution) every second day. Iced compresses were applied intermittently. Hot lead water and laudanum applications to the enlarged glands gave much relief and incision was made when abscess occurred.

MELANOTIC FLAT SARCOMA OF THE CHORIOID, WITH UNUSUAL CLINICAL SYMPTOMS.

Dr. G. E. de Schweinitz and Dr. C. M. Hosmer read this paper. by invitation.

The patient, a woman, aged 42, for one year prior to her examination, had noted failing vision in the right eye, and on several occasions had had attacks characterized by neuralgic pain, edema of the lid, localized edema of the conjunctiva, and injection of the ocular conjunctiva over the edematous area. During the intervals the eye had been comparatively comfortable, and at the time of the attack there had been apparently no rise of tension. Examination revealed two detachments of the retina, one in the upper portion of the fundus, which was covered with small, brownish-black spots, and which did not float forward into the vitreous, and another in the extreme lower periphery of the fundus, upon which these black spots were not present. Transillumination confirmed what ophthalmoscopic examination already indicated, namely, the presence of a growth of the chorioid. The eye was enucleated, and a flat, mottled, brownish-black tumor was found lying upon the inner surface of the sclera, and extending from the angle of the anterior chamber to within 5 or 6 millimeters of the nerve entrance. It was 2.5 mm. in thickness. The growth was made up of stellate cells and chromatophores and diffusely involved the chorioid, the ciliary body, the extreme periphery of the iris, and the angle of the anterior chamber and sclera. The inner layers of the sclera were also infiltrated. In places there was a distinct alveolar arrangement of the cells. On the side of the tumor the filtration angle was closed, and on the other side it was evident that the root of the iris had been in contact at one time with the ligamentum pectinatum. Partial occlusion of the vortex veins was also demonstrable. The intermittent attacks of neuralgic pain associated with localized edema of the conjunctiva were similar to those reported in connection with a case of diffuse melanosarcoma by Dr. Charles Kipp. The authors thought it probable that these recurrent edemas were the expression of a glaucomatous attack, even though there was no demonstrable increased intraocular tension at the time, because, in their case at least, there were evidences of occlusion of the filtration angle on one side, and such a condition of affairs that there must have been temporary occlusions upon the opposite side, as well as similar partial occlusions of the vortex vein. The value of transillumination was dwelt upon, and this case was emphasized as another example of those described by Dr. J. Herbert Parsons, who found that the retina may be detached, or, rather, elevated by the growth, in one portion of the eye, while in another portion there is a second detachment of the retina, separated from the chorioid by an albuminous exudate. The authors also briefly referred to the cytology of diffuse sarcomas of the chorioid and the method in which they grow in contrast with ordinary tumors of this nature.

Dr. G. E. de Schweinitz and Dr. C. M. Hosmer (by invitation) demonstrated an eyeball with recurring iridokeratitis and posterior staphyloma. The eye had been blind for many years, and the patient had always been myopic. The eyeball was irregular, with a low, rounded bulging of the equatorial region lying between the superior and external recti muscles. A second staphylomatous process was evident on the temporal side of the optic nerve. From the center of the cornea to the nerve entrance was 27 mm.; from the center of the cornea to the apex of the corneal staphyloma, 29 mm.; the vertical diameter of the eyeball was 24 mm.; and the horizontal diameter, 25.5 mm. Microscopically there were the evidences of parenchymatous keratitis, chronic cyclitis, atrophy and narrowing of the chorioid, detachment and degeneration of the outer layers of the retina, and great thinning of the sclera, especially at the posterior staphyloma. The optic nerve was distorted and atrophic.

Dr. Howard F. Hansell read a paper on "Extraction of a Fragment of Steel from the Vitreous; Purulent Hyalitis; Recovery." The patient had been struck on the eye three days before examination by a piece of pig-iron which, he said, was fully ½ inch square. No wound could be found in the cornea or sclera, but there was marked iridocyclitis, and an exudate in the pupil obscured a view of the eyeground. Although the presence of a foreign body in the eye did not seem probable, a radiograph was taken and revealed a foreign body near the floor of the vitreous. An incision through the sclera was followed by the escape of pus, and when the magnet-tip was introduced a small fragment of iron, 1 mm. square, was removed. A solution of 1:10000 bichlorid was injected into the vitreous and the conjunctiva sutured over the opening. The inflammation subsided, and the patient left the hospital in a week. The cornea and lens were clear, the pupil was dilated and a whitish exudation could be seen in the posterior part of the vitreous. Dr. Hansell emphasized the importance of radiographic examination in all cases of injury by foreign bodies, although there may be insufficient grounds for believing that the foreign body is within the eye. He considered the case interesting also in demonstrating the curative value of injections into the eye of strongly antiseptic solutions, despite the presence of an active purulent process.

EDWARD A. SHUMWAY, M.D., *Clerk of Section.*

Notes and News.

Dr. H. Bert Ellis, of Los Angeles, Cal., is recovering from his recent severe illness.

Dr. M. Hillmanns has recently located in Freiburg i. Br. for the practice of ophthalmology.

Dr. Rudolph Mardzinski, of Grandenz, Germany, has taken up ophthalmology in that city.

At the opening of the New Woman's Hospital in New York, Dr. D. B. St. John Roosa delivered one of the addresses.

Dr. Merton E. Marvin, Luzerne, Pa., may lose one of his eyes as a result of the accidental discharge of a gun recently.

The engagement is announced of Frl. Jenny Mathiason and Dr. Leo Jacobsohn, who is engaged in the practice of ophthalmology in Berlin.

The Massachusetts Charitable Eye and Ear Infirmary, Boston, has received a bequest of $5,000 by the will of Charles Merriam, Boston.

Dr. Charles S. Bull, of New York, was elected, Dec. 6, 1906, to the position of corresponding secretary of the New York Academy of Medicine.

Prof. Dr. Carl Volckers, professor of ophthalmology in Kiel, Germany, has resigned his position. He was born March 28, 1836, in Schleswig-Holstein.

Dr. Paul Erdman has qualified as privatdozent in ophthalmology in Rostock, Germany. He was Professor Peters' first assistant at the University Eye Clinic. at Rostock.

At the recent meeting of the board of medical directors of the Cincinnati Hospital, Drs. Robert Sattler and Derrick T. Vail were elected ophthalmologists to the hospital.

PROF. DR. THEODORE SAEMISCH has resigned from his chair of ophthalmology at Bonn University. He was born Sept. 30, 1833, and has held his present chair since 1869.

PROF. DR. HERMAN COHN, who died recently in Breslau, left a legacy of $2,500 to the University of Heidelberg, the earnings from which are to be used as prizes for work done in ophthalmology.

PROF. PIERRE JANET, of Paris, read a paper at a special meeting of the New York Neurological Society, November 28, entitled "Disturbances of Vision in Hysterical Patients, Produced by Exaggeration of Binocular Association."

AT THE annual meeting of the Middle Tennessee Medical Association at Shelbyville, November 16 and 17, Dr. G. C. Savage, of Nashville, responded, on behalf of the visiting members, to the address of welcome delivered by the mayor.

DR. CHARLES M. ROBERTSON, of Chicago, recently sustained a painful injury of the right arm and shoulder. He was crushed between two electric cars on State Street and narrowly escaped death. He was cared for at the Policlinic Hospital and has now resumed his practice after an absence of a month.

DR. MASUNO, a prominent Portuguese oculist, suddenly became unconscious while reading a paper before the section of ophthalmology at the Lisbon Congress. He died while comatose. He was independent of practice and devoted himself to the treatment of the poor, for whom he had founded a free private hospital and training school for the blind.

IN AN article in *La Clinique* on the various methods of deciding whether or not death has taken place, Dr. M. d'Hallum recommends the use of dionin or ether dropped into the eyes. If there is any heart action whatever, even though so slight that palpation and auscultation fail to discover it, these drugs will produce an injection of the vessels of the bulbar conjunctiva.

THE December meeting of the Chicago Ophthalmological Society in Booth Hall of the Northwestern University was unusually well attended. A number of visitors were present, among them Dr. Frank L. Rust, of Boston, Dr. Horace Bonner, of Dayton, Ohio, and Dr. David W. Stevenson, of Richmond, Ind. Dr. Stevenson and Dr. Bonner made an extended visit, devoting their time to clinical work.

The Journal of the American Medical Association states that the fact that the Nobel prize this year has been awarded to Cajal and Golgi has roused their compatriots to do them exceptional honor. It has been proposed that one street in Madrid and one in Pavia be named after Cajal and Golgi, respectively, and the name of Golgi is to be given to one of the hospitals of Pavia. Various other projects are also being discussed. It is reported that Cajal may be knighted and made a senator for life and that endowed prizes may be given in his name.

THE immigration authorities have discovered at Philadelphia what they believe to have been a conspiracy to land in this country large numbers of Armenians who are now in London, all of whom, it is alleged, are suffering with trachoma. Three Armenians have been indicted in Philadelphia for attempting to bribe an immigration inspector, through whose intervention it was hoped to introduce into the country the diseased immigrants. The Commissioner of Immigration estimates that there are abont 10,000 cases of trachoma among the aliens of New York.

PROF. WILLIAM JACKSON tells in his "Persia, Past and Present," some stories illustrating character in the land of Omar Khayyám. One is of a man who, suffering from inflamed eyes, went to a horse doctor for treatment. The veterinarian gave him some of the salve that he used on animals and the man lost his eyesight. He then brought suit in court to recover damages. The judge, after weighing the evidence in the case, handed down his decision as follows: "There are no damages to be recovered. The man would never have gone to a veterinarian if he had not been an ass!"

BLIGHT AMONG SCHOOL CHILDREN.—In view of the prevalence of blight among children in the western districts, inquiry was made of the Department of Health by the Education Department as to whether it would be possible to prepare an efficacious lotion which might be obtained at a small cost and applied by teachers or parents to the eyes of children suffering from blight. The Health Department was also asked to prepare suitable directions for the information of teachers, parents and children. The medical members of the Central Board of Health expressed the opinion that eye blight was almost entirely, if not absolutely, conveyed from patient to patient by flies—the vehicle of infection—and that the first efforts should be toward prevention. They therefore recommended the use of gauze doors in schools, churches and other public places where children congregate. The use of mosquito veils dependent from the hats and covering the heads and necks of children; these veils to be constantly worn during the day, at home, in schools, and when playing about. Also the use of an ointment to smear on and around the eyelids and lashes, such ointment to consist of citrine ointment, unguentum hydrargyri nitratis, 1 oz.; oil of wintergreen, 1 oz.; lanoline, white vaseline, of each, 5 oz.; the children to be warned that rubbing the eyes with the hands was calculated to increase and not relieve the mischief.—*South Australia.*

TRANSPLANTATION OF THE CORNEA.—At a recent meeting of the Medical Society of Vienna, Austria, Dr. Zirm showed a man on whom he had successfully performed transplantation of the cornea. The patient had lost the sight of both eyes.

By chance the surgeon had to take out the eye of an 11-year-old boy. The eye was ruined by a steel splinter in the interior, but the cornea was intact. The operator, therefore, cut slits in the opaque cornea of the man's eyes and inserted pieces from the boy's eye.

The experiment failed as to the right eye, as the transplanted window also thickened, but in the left eye it retained its transparency and almost normal vision was restored. A very close examination revealed a slight veil over the left eye, which, however, does not prevent the patient from reading small print. From being stone blind he is now able to go about his work.

The surgeon attributed numberless previous failures to the fact that the cornea of animals had heretofore been employed, whereas in this case human material was provided.

COWS WEAR GLASSES.—REMARKABLE HERD OF MYOPIC MILKERS OWNED IN ARKANSAS. If one were inclined to make a pun he would say that the cattle owned by George Hepro and kept by him on his farm near here are "spectacles." It would be true of them in one sense of the word, and, to a certain extent, in both senses, says a Big Sandy (Ark.) dispatch to the Baltimore *Sun.*

About twelve years ago Mr. Hepro was the owner of a prize cow named Arrydyce, the best milch cow in this part of the country—

so excellent an animal that he was offered $1,100 for her by the state agricultural college. He would not sell her, even at this high price, but not so long after he had refused the offer he was sorry that he had not done so, for the animal became troubled with a bad case of short-sightedness and feeble vision. She could not see things well, even when they were within two inches of her nose, and nearly starved to death in the pasture before it was discovered that she could not see the grass well enough to eat it.

Mr. Hepro's son, Montmorencie, is an oculist in Little Rock, and happening to be home on a visit at the time the cow's difficulty was realized, he suggested that he could make a pair of spectacles for her that would enable her to see as well as ever. He was given the commission, with a promise of $100 if they worked, and in a very short time he had fitted the high-priced bossy out with an excellent pair of bifocals that enabled her to graze and eat as well as ever with her head down and to see distant objects as clearly and distinctly as in the palmy days when her head was lifted. She became as valuable as ever, and the college renewed its offer, which was again refused by the farmer. It soon developed, however, that the peculiarity of short-sightedness and feeble vision was hereditary in her descendants to the second and third generations, and inasmuch as her remarkable milking qualities were hereditary also, Mr. Hepro could not think of changing the breed. He held onto it, and, while adding to his bank account by means of the astonishing flow of milk that characterized all of the Arrydyce strain, he continued to remedy their inherent visual defects by the use of the same kind of glasses that the noted ancestress of the herd always wore.

These aids to the vision had to be placed on the calves at an early age and changed, both as to size and degree of refractive power, as the animals grew older, which latter change has also to be made occasionally even after the animals have reached maturity.

He now has a herd of 23 of the wonderful myopic milkers, and it is a strange sight to see them roaming over his extensive pastures, all fitted out with large, strong, shining and expensive bifocal glasses—old cows, calves and all—as solemn and serious looking in appearance as an assemblage of Boston schoolmarms.

Mr. Hepro claims that the wearing of the glasses has a sobering effect on the animals, which is perfectly apparent even in the young ones, and that they never frisk about and play as other calves do. The cattle are very fond of wearing the glasses and are very careful, scarcely ever breaking them.*

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* A search of medical directories failed to find the name of Montmorencie Hepro, but it is a good story at any rate.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

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Original Articles.

SOME IMPRESSIONS OF THE BASLE OR INNER-POLE MAGNET.

H. GIFFORD, M.D.
OMAHA, NEB.

[Illustrated.]

In March, 1906, the RECORD called attention to the report of Jurnitschek (*Zeitschrift für Augenheilk.*, November-December, 1905) on the use of a new form of magnet at the eye clinic of Mellinger in Basle. This magnet was made at the suggestion of Hagenbach-Bischoff, professor of physics of Basle,[1] and consists essentially of a large electric coil mounted in a vertical position on a standard. The patient places his face within the coil so that the affected eye comes as near the center as possible, and soft iron cores, varying in size according to the needs of the case, from that of a lead pencil to a large horn weighing several pounds, are brought by the operator into contact with the eye after the current has been turned on. Under these conditions both the steel in the eye and the core become magnetized, and, as the former lies near the center of the coil, it is subject to the greatest possible amount of magnetism for any given coil, current and core. The fact that the original apparatus could be used only in the vertical position and has no provision for intraocular work induced me in ordering a similar coil to have slight modifications made in it. Instead of using a standard to sustain it I have had it suspended with a transverse rope bale and counterweight, so that it can be used equally well at any height and at any angle (Fig. 1). I have also had extra cores made for intraocular use, as shown in Figure 2. The blunter points are for application to the exterior of the eye, the others for introduction between the lips of the wound or into the anterior chamber or vitreous.

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[1] This instrument has been referred to by some as the Mellinger magnet, but from the description given by Jurnitschek of its origin this designation seems hardly justifiable. The idea was furnished by Hagenbach Bischoff, and Jurnitschek speaks of the details having been worked out by "us" with the aid of the electrician Klingelfuss.

I have used the inner-pole magnet in three cases, and have found that, while (with the coil at my disposal) it does not give the force of the Haab magnet it is extremely handy for removing steel from the anterior and posterior chambers after the foreign body has been drawn forward by the giant magnet.

One of these patients was a man with a piece of steel (3x2x1 mm.) in the vitreous. This had, 24 hours before, passed through the cornea and the lens, the latter being mostly opaque and the projection poor. The inner-pole alone failed to draw the steel forward even when a very heavy large core was placed within the coil next to the eye: but on using the giant magnet the steel was promptly drawn into the lower part of the posterior chamber. The instant the bulging of the iris was noticed the current was turned off to prevent the possibility of pulling out the iris with the foreign body—an accident which I have seen happen and which has also happened to others. The original corneal wound was then slightly enlarged and the inner-pole magnet tried again. This pulled the steel up toward the wound, but it caught in the posterior surface of the iris and drew the latter with it, so, instead of trying greater magnetic force, a small iris spatula was passed in behind the iris to free the steel from the latter. The inner-pole was then applied to the cornea again and the steel was drawn out through the wound.

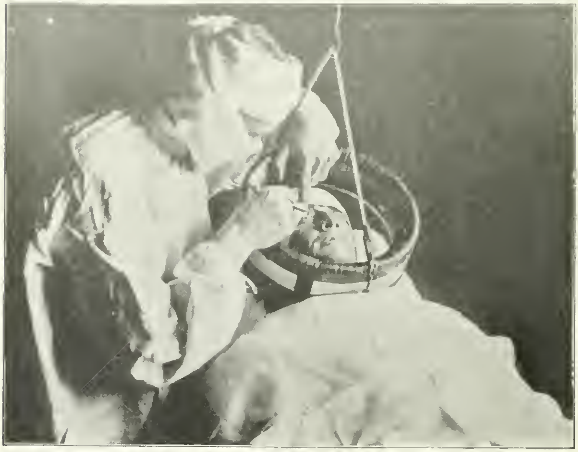


Figure 1.

leaving the iris practically uninjured. There was no inflammatory reaction, but as there was some increase of tension from the swollen lens the greater part of the latter was extracted after a week by my colleague, Dr. Bicknell. The man went home four weeks after the operation with some lens substance still obstructing the pupil, and with projection about as poor as it was before the extraction of the steel; but the eye is undoubtedly saved and there is a possibility of his getting some useful sight yet.

In another case a very small flake of steel (1x½x1/5 mm.) was plainly visible in the upper outer quadrant of the lens a few hours after it had passed in through the cornea. With the inner-pole magnet the steel could not be moved, but the Haab magnet drew it into the anterior chamber, whence it was readily removed by the inner-pole through an incision in the lower part of the cornea. This patient demands some extra notice on account of the fact that when he came in the injured eye had V. 20/20. After a week an extensive opacity of the cortex had developed, reducing V. to about 20/100; two months later this had all cleared up, leaving V. 20/20 minus without glasses. The only traces of the injury and operation were two small scars in the cornea and two in the anterior capsule.

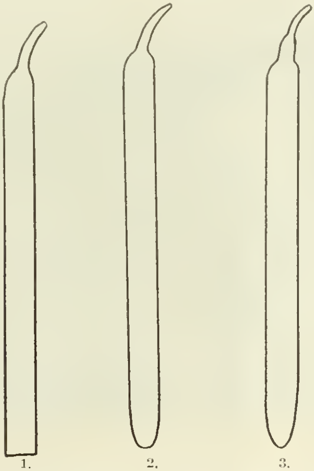


Fig. 2.—No. 1 has a round point. Nos. 2 and 3 have flat points curved on the edge; about one-half natural size.

The third case was almost identical with the first, except that the small flake of steel had been in the lens long enough to produce an almost total cataract. Just how long it had been there could not be told, as the patient had absolutely no recollection of having injured the eye at any time. It was removed in the same manner as Case 2. The inner-pole failed to budge it till it had been drawn out of the lens by the Haab magnet. Then the saber point of the inner-pole removed it through a corneal cut. It was necessary, however, to depress the upper lid of the wound with the magnet point, as the steel on coming up from the chamber-angle got stuck in the anterior iris-surface and could not be moved further until the iris was pushed back a little. The cataract has not been removed yet, but the indications are that when this is done the eye will have first-class sight. There was no reaction in either of the last two cases.

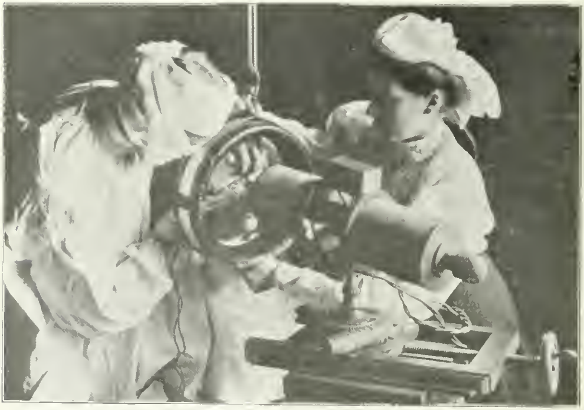


Figure 3

It is evident on comparing my slender experience with that reported by Jurnitschek that my coil is much weaker than it should be. I ordered the local electrician to duplicate the Basle instrument, as nearly as possible from the picture in Jurnitschek's article, but he produced a much thinner coil of a greater diameter; and, while he assures me that it is as powerful as it can be made for the 500-volt current which I have to use, I am sure that he is wrong and shall try to improve it. But even with as powerful a coil as that used at Basle it does not seem likely, from the results reported by Jurnitschek, nor on *a priori* grounds, that as much power will be obtained with the inner-pole as with the Haab magnet unless a much deeper coil is used, so that a greater length of core will be brought under the influence of the coil. But this would increase the difficulties of manipulation and illumination and thus nullify the main advantages of the instrument.

It seems to me, therefore, doubtful if the inner-pole, in its most useful form, can excel or even equal the strength of the Haab instrument, but, admitting this, even the slight experience which I have had with it makes certain advantages so apparent that after having once used it I should very much regret to have to get along without it. These advantages are the ease with which the eye can be illuminated when the small points are used, and, above all, the astonishing handiness of the small cores in comparison with the giant magnet or any hand magnet that I have ever seen. One can handle these cores with practically the same ease and delicacy with which one could use a pencil, and, although I have not used them within the human vitreous, it is plain, from what I have done with sheep's eyes, that they must show the same advantage there.

My impression, then, is that, while for cases in which great magnetic force is required the inner-pole alone can not exceed nor perhaps even equal the Haab magnet, in other cases where the smaller cores suffice it has decided advantages; although whether any one with a Haab magnet and a good Hirschberg magnet, or one of its modifications, ought to feel that he should go to the extra expense of the inner-pole instrument is doubtful. Where a maximum of magnetic force is desired, the Haab instrument used as an inner-pole, as shown in Figure 3, would seem to be the ideal.

A NEW INSTRUMENT.

CHARLES H. BEARD, M.D.
CHICAGO.

[Illustrated.]

The fixation forceps is an article in constant demand, yet, of all the instruments pertaining to ocular surgery, this, in its present almost universally accepted form, is perhaps the clumsiest to handle. This is particularly true of its use in those operations of extraction and iridectomy requiring the grasp of the forceps to be below the cornea, and in the vertical meridian, with the surgeon standing at the head of the operating table. Under these conditions the position of the hand that holds the instrument in question is most awkward. It must make a bend of 180° to the long axis of the forearm, thus not only cramping and crippling it, but putting it in the way and in the light (Fig. 1). In common with many of my colleagues, I have long deplored the shortcomings of this fixation forceps, and, within the past three years, seeing that no one else was making any effort to improve the implement, I began a little campaign along that line on my own account. I first made a series of drawings representing three or four models looking to the desired improvement. These I submitted to Messrs. V. Müeller & Co., the Chicago instrument makers. They selected one of tubular form, wherein the jaws of the forceps were attached to spring arms, or members, playing in and out of the lower end of the tube by pressure upon a piston-like arrangement at the other end. This instrument, which was exhibited before the Chicago Ophthal-

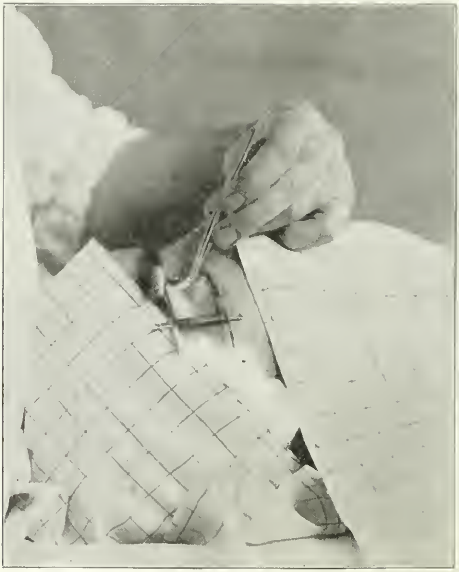


Figure 1.

mological Society nearly three years ago, proved handy and efficient, but lacking in simplicity. Later we took up the design which has resulted in the form of forceps now to be described. The essential underlying principle of this forceps is borrowed from that indispensable adjunct to ophthalmic surgery known either as Matthieu's or De Wecker's forceps-scissors, and which, in its turn, was the outgrowth of the Liebreich forceps. The chief object sought was a forceps that would admit of the hand lying comfortably upon the patient's nose, while the fingers holding the instrument would be directed at an angle not exceeding 90° to the long axis of the forearm, and at the same time the jaws of the forceps would be directed toward the operator. In order to meet these requirements the members of the forceps were made to take the place of the blades of the scissors in the De Wecker instrument. Instead, however, of having these members operate in the same sense, as do the scissors in the parent instrument, they were set at right angles

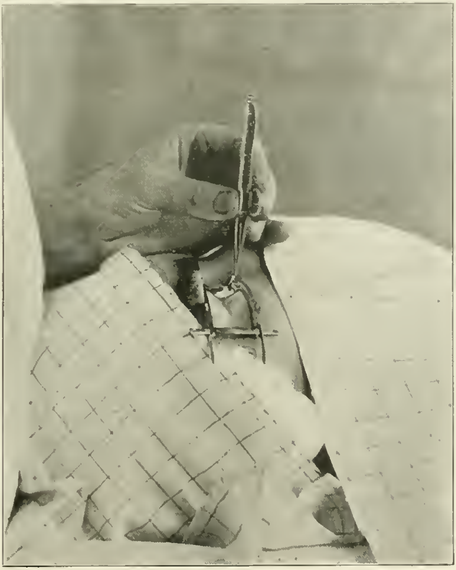


Figure 2.

to that sense. By this means 90 of the 180 degrees of bend in the hand necessitated by the regulation forceps were given to the instrument itself. Hence, as shown in Figure 2, when the wings or handles are pointing toward the patient's right side, the jaws of the forceps are pointing toward the operator stationed at the head of the table. The short members of the forceps are set at such an angle, and the jaws themselves are given such a bevel that when applied to the eye the body of the instrument assumes a vertical position. This seems to afford greater convenience and precision of manipulation than the position assumed by the older forceps, viz.: one nearly perpendicular to the center of the eyeball. In applying the forceps to the left eye the wings or handles are directed toward the patient's nose and are worked by the right hand with the fingers pointing toward the patient's left side. The handling of the contrivance is perfectly easy and simple for either eye. Another distinct advantage of this forceps lies in the fact that there is less tendency on the part of the operator to press upon or to pull away from the globe than with the one now in vogue. Figure 3 shows the forceps about natural size and an extra view of the short members and jaws taken from below. The added roughened finger-hold, observed alongside that on the wing, makes the whole instrument feel much more secure in the grasp than did the De Wecker model. In practice this forceps appears to fulfill the aim and desire that it should be an improvement upon its predecessors.

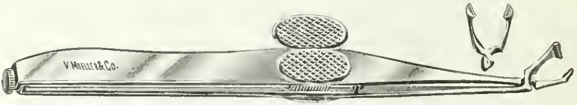


Figure 3.

TUBERCULIN INJECTIONS IN A CASE OF PROBABLE CEREBELLAR TUMOR.

H. B. Young, M.D.
BURLINGTON, IOWA.

The propriety of adding my experience in the use of tuberculin to the symposium to-night may be questioned, and for two reasons: First, because no positive diagnosis of tuberculosis has been made in the case to be cited, and, second, because no definite conclusions have been reached in the way of results. Two unexpected effects have, however, been noted, and, as one of them has been constant, it has been considered not improper to lay the case before you.

Some of you will remember the 10-year-old girl, Ruth R., that I showed at the May, 1906, meeting with fundus changes simulating albuminuric retinitis, in whom the diagnosis of intracranial neoplasm was possible because no kidney lesion could be made out. To put it before you succinctly I will epitomize the record:

First seen April 20, 1906. History of two months' ailing. Began with morning sickness, sudden and forceful vomiting, accompanied with fronto-occipital headache. Otherwise cheerful and playful. Scarlatina, eighteen months ago, very mild. Mother died of appendicitis (after operation) six years ago. Father in robust health. One maternal uncle died of "paralysis" after three years' illness, the last eighteen months of which could not speak, but wrote all he wished to say until arms were paralyzed shortly before death (45 years old at death). One paternal uncle died of tuberculosis, acute, and supposed to have been acquired by residence and nursing in a tuberculous family after leaving home. No trace of rheumatism or venereal disease in either family. The patient has been "doctored for malaria and worms." On April 5 had midday vomiting followed by mental confusion or aphasia for an hour or two and defecated without notice in the bed.

Shortly after this there was discovered a defect in vision which brought her to me.

Externally the eyes were normal. V., R. 20/50. L. 20/100. Head tilted to the right. Vision not improved with time. Pupils in ordinary light 4.5 mm., reach fairly to strong light and convergence, but contraction not well maintained. Fundus almost typical of albuminuric retinitis. Ears and nose negative. No knee-jerk, no ankle clonus, no Babinski-Rhomberg back and to right. Staggering walk. Pulse, 90. Temp., 99.6, afternoon. Urinalysis, two days later: Sp. gr., 1026; 24 fl. oz. in 24 hours; no albumin, no sugar. Ditto 5 days later: Sp. gr., 1022; no sugar; no albumin; 1 granular cast; pulse, 90; temp., 98.6 (second day). On May 4 no morning sickness, but vomiting at noon, followed by mental confusion, partial aphasia and inability to hold things in right hand; lasted until 4 p. m.; slept from 6 p. m. to 6 a. m.; voided urine at 6:30 a. m., 4 fl. oz., the total amount in 18 hours, and had free bowel movement: sp. gr. of urine 1030, no albumin, no sugar. Came to Chicago May 8; examined by Dr. Sanger Brown and Dr. Charles Spencer Williamson. The former reserved judgment until the latter reported kidney and other somatic functions negative and blood pressure 70 mm. without cardiac hypertrophy;

then probable and inoperable cerebellar tumor was Dr. Brown's conclusion. Whether this tumor was gummatous, tubercular or sarcomatous was for the future to determine.

The first being possible, mercury was administered by inunction for a week; then kali iod. was given for 5 weeks, reaching 75 gr. per diem the last 2 weeks. No effect. The child meanwhile was slowly losing ground in weight, strength, spirits and vision—particularly in the right eye, which was 20/130, while the left was 20/130 +.

It was then proposed to try by treatment the second possibility, to which I was particularly attracted by statistics given me in a letter from Dr. Allen Starr, of New York. In 300 cases of cerebellar tumor 2 were gummatous, 174 tubercular and the other 124 sarcomatous, although it is only fair to Dr. Starr to say that he discouraged me by saying that he had seen no good effect from treatment either by tuberculin or Coley's lymph.

On July 8 the child was placed in the hospital and temperature taken by rectum at regular intervals until the evening of the 10th, when 1 mg. Koch's T. R. was injected over deltoid. Temperature chart before injections was as follows: July 9 (8 a. m.), 98.2, 99.5, 99.2, 99.2, 99.6, 99, 99.8; July 10 (8 a. m.), 99.2, 99.4, 99.6, 99.5, 99.6, 99.7. After injection: July 11 (8 a. m.), 98.1, 98.2, 99.2, 99.6, 98.8, 99.2. Increased headache and pain referred to back of neck, malaise, loss of appetite and inability to urinate until noon, though frequently attempted.

July 12 (8 a. m.): 98, 99.2, 99.4, 98, 99, 98.8.

July 13 (8 a. m.): 97, 97.2, 98, 98.2, 97.8, 97.8. Urine dribbles invol. R. 110 calomel, each hour, 5 mg.

July 14 (8 a. m.): 98.2, 98.6, 98.8, 99.2. R. calomel repeated as yesterday. Then bowel movement.

July 15 (6:30 a. m.): Emesis (first in week), 99.2, 98.8, 99, 99.2. Urine invol.

At 7:30 p. m. 2 mg. injected as before.

July 16 (6 a. m.): Emesis, prostration, intense headache; pulse, 114, 110, 108, 100, 96, 98, 98, 98, 98, 99, 99.

July 17 (9 a. m.): 99.2, 99, 98.8, 98.6. Urine voided naturally.

July 18 (9 a. m.): 98.2, 98.2, 99.8. Felt well, reclining without pillow. Went home. After leaving the hospital she had injections at home—August 20, 26, September 3, 17, 24, October 5, 13, 29, November 12, 25—each approximately 1 mg. Invariably there has been slightly reduced limp the following 24 to 48 hours.

It will be noted that more than a month elapsed between the hospital and home treatment, due to want of confidence in it. In the interim there was a steady, slow decline in weight, sight and mental activity. She laid apathetically supine and pillowless in the bed. Emesis and headache were occasional only. Feces and urine were voided in the bed unconsciously, and there was rigidity of the neck with manifest discomfort in every attempt to move it. "I don't remember," was the common answer to such questions: "Did you sleep well last night?" "Did you have any headache to-day?" "Did you eat a good breakfast this morning?" Simply because something had to be done, and the now comparative infrequency of vomiting and complaints of headache gave no occasion for medicine, the injections were resumed as the least objectionable course.

Conditions remained practically the same for a month. Then it could be seen that she was less apathetic and the scales showed a notch or two of increased weight. Since this time she has slowly but steadily increased in weight until the total gain is 6 pounds. With this increase in weight there has also been increase in strength. She moves all over the bed, has resumed partial use of the pillow, sits at time on the edge of the bed or propped in a wheeled chair to eat or drink, wants to be put on her feet to try walking, and talks gayly with her friends, using a hand telephone to call up the neighbors. Vision, however, is only quant. P. L. in the left eye (this doubtful in right), the fundus changes looking to atrophy.

Conclusions at this time are hardly permissible, but the marked improvement in such a case argues for possible cheesy or chalky degeneration of the neoplasm, and, as this improvement has been reached under an exclusive treatment, there is ground for the tubercular diagnosis.

One question pre-eminently suggests itself, viz.: Has not the unfavorable verdict about tuberculin in such cases been based upon the use of the old tuberculin? And as corollary to this: Will there not, if my patient goes on to recovery, be encouragement to work the field over again with Koch's T. R.?

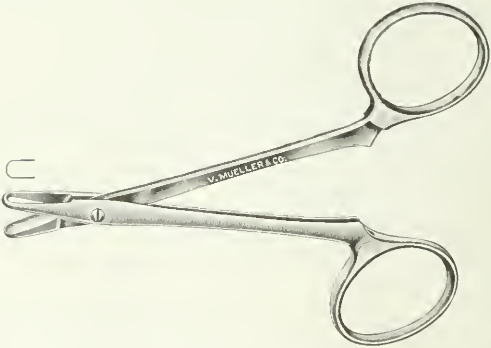
CHALAZION FORCEPS.

HENRY R. BOETTCHER, M.D.
CHICAGO.

Illustrated.

In the removal of cystic tumors from the eyelid where the operation is done from the conjunctival surface, the writer has noticed a tendency for the incision to close and the cyst to re-form. To prevent this closing I had made, two years ago, a punch forceps with which I remove a piece of the cyst wall. This establishes a perfect drainage, allows the cavity to fill in with granulating tissue and leaves no perceptible scar.

Method.—First, cocain, 10 per cent. solution, dropped into the eye three times in ten minutes. Invert tarsus. Apply chalazion clamp; for tumors on the upper lid the clamp may be dispensed with and the left thumb nail slipped under the tarsus, holding the lid in place with the first finger; the act of compressing the lid between the finger and thumb nail prevents hemorrhage and causes the tumor to come forward. This method of holding the lid is less painful than when the clamp is used.



Second, make a horizontal incision across the lower third of the tumor, insert narrow blade of forceps and punch out one or more pieces. This will leave an opening through the central portion of the cyst wall. Curette thoroughly and let alone, as local applications are not needed. I have never seen one re-form after this method of operating. Of the different models of this forcep that I have made I like the above the best.

PULSATING EXOPHTHALMOS—LIGATION OF ORBITAL ARTERY—RECOVERY.*

F. Park Lewis, M.D.

BUFFALO, N. Y.

[Illustrated.]

The following case is of such an unusual character and the result of operative interference so satisfactory that a brief report may not be without value.

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* Patient was presented, with remarks, at the December, 1906, meeting of the Buffalo Ophthalmological Club.

H. B., a strong, vigorous working man. 26 years old, had been celebrating with a party of convivials at a picnic, and on returning was in a happy frame of mind. On the way he engaged in a scuffle, during which some one struck him on the back of the head. He was taken home in an unconscious condition and did not fully re-

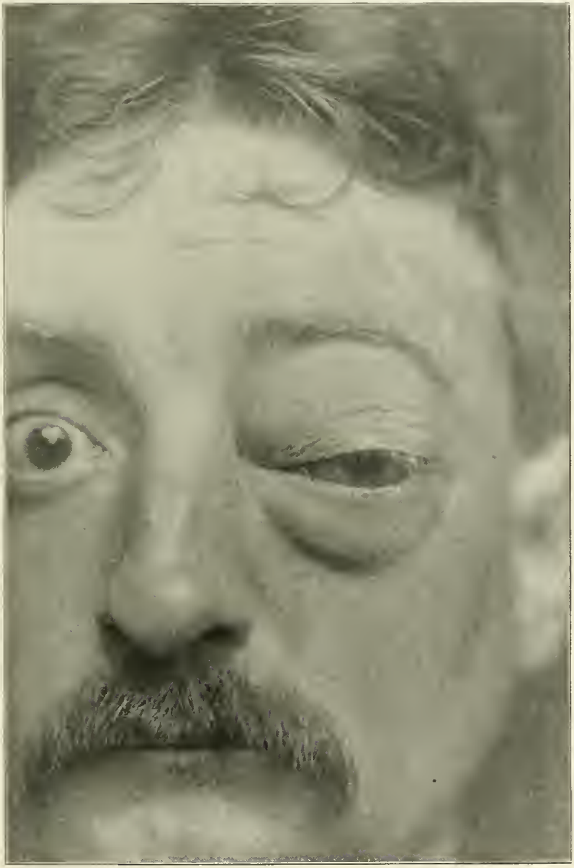


Figure 1.

cover for several weeks, at the end of which time he found his left eye fuller than it should be, with a sensation of beating extending through his head. This continued for nearly a year, gradually increasing until he presented himself, seeking relief, in September, 1903.

At that time the condition which was found to exist is well shown by the accompanying illustration. The eye protruded beyond its fellow, being pushed evidently at the same time downward and outward. Measurements taken at the time showed the displacements to be forward 10 cm., out 6 cm., and down 2 cm. He had heteronomous diplopia. The eyeball was highly injected, but the pupillary reaction was normal. Slight fulness of the retinal vessels.

A marked bruit could be heard over a space an inch in diameter at the inner orbital angle.

R. V. = 20/30. L. V. = 20/30.

A tense tumor could be felt through the upper lid, pulsating synchronously with the heart-beat. It could be distinctly outlined through the closed lid until it became lost in the orbital tissues.

The man had been advised that an enucleation would be necessary before the tumor could be reached. A marked feature of the case was a feeling of anxiety almost amounting to nervous terror since the eye had begun to protrude. The pulse was rapid, the face flushed, the voice tremulous and hurried.

It was evidently an aneurism of the ophthalmic artery, and as it seemed to involve but the one vessel, it was determined to attempt to ligate it without removing the eye. The man was sent, therefore, to the hospital, and under profound anesthesia, the lids being widely opened, a careful dissection was made down to the tumor. The artery was found to have curved upon itself—the largest portion having the diameter of a man's little finger. The dissection was a long and difficult one. The eyeball was everted as far as possible to the temporal side, when the aneurismal tumor was found to extend backward, gradually reducing in diameter until it wound around the optic nerve near the optic foramen. Several ligatures were placed around the enlarged vessel as the operation proceeded, until at last with some difficulty the artery was tied off just within the orbital cavity. The tissues were then carefully coapted and retained by sutures, as complete asepsis being maintained during the operation as possible. Ice bags were applied and healing took place without marked reaction. Within three weeks the patient was discharged. Some divergence still remained, but the bruit and proptosis had completely disappeared.

The patient presented himself again in December last—three years after the operation—with both eyes apparently perfectly normal. A slight paleness of the disc of the left eye was present, but vision was alike in each eye, i. e., 20/30, a slight normal deficiency being present. Congestion had quite disappeared, and the patient was well.

The interest in this case centers in the fact that, although some portion of the aneurism extended outside of the orbit, a ligature within succeeded in controlling it, and that without removal of the eye.

In the classical article on this subject by Sattler in the Grafe and Saemisch *Handbuch der Augenheilkunde*, Vol. 6, in which 106 cases were carefully studied and analyzed, and in most of which ligation of the common carotid was performed, none are found in which the conditions and results correspond with this.

A SIMPLE TEST FOR THE CONVERGENCE POWER

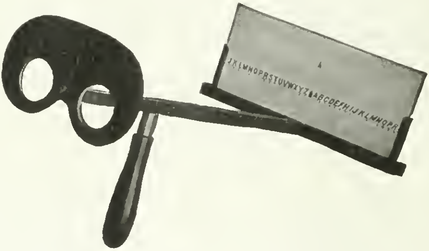
WHILE STIMULATED BY ACCOMMODATIVE EFFORT—THE DESIRE FOR SINGLE VISION BEING REMOVED.

Mark D. Stevenson, M.D.
AKRON, OHIO.

(Illustrated.)

This test is used to ascertain whether a patient's eyes converge just enough, too much, or too little for an object held one-third meter—ordinary reading distance—from the eyes, while the desire for single vision is suppressed. In making this test the patient should hold the instrument close in front of the trial-frame. In young people the latter should contain the proper correcting lenses for distance, and in presbyopes the reading lenses, in order that the convergence may be rightly stimulated by the proper amount of accommodation required for an object at the same distance. Unless the patient is blind in one eye, or for any reason—e. g., squint—suppresses the image in one eye, the prisms of the instrument will make him see two lines and two arrows. The right eye will see the upper line and arrow; the left, the lower line and arrow. The patient should be asked if he sees the two arrows, one higher on the card than the other. If he does, he is requested to look sharply and constantly at the small figures, so that the accommodation required may stimulate his convergence. While doing this he is asked to which letter in the upper line the lower arrow points. The desire for single vision being suppressed, the amount of convergence stimulated by the accommodation, etc., varies, and, therefore, the patient's eyes move slightly, so that he is likely to designate first one letter, and then another, or to say that it points between certain letters. It is best to depend on the first few replies, and then remove the instrument, as otherwise he will consume valuable time by mentioning the changing position of the lower arrow. If the patient states that the arrow points to C it signifies 3° of insufficiency or weakness of convergence. If it changes from D to H it means from 4° to 7° of insufficiency. If midway between the lower arrow and A it signifies ½° of weakness of convergence for that distance. If to Y it means 2° of excess of convergence.

The first seven letters on each side of the arrow are not found on the other side, so that when one of these letters is mentioned it is at once known whether it means excess or insufficiency. The other letters are found on both sides, and, therefore, in order to know which one is designated, it becomes necessary to learn if the letter is slanting or straight, or it must be pointed out by the finger of the patient. If the lower arrow points to one of the slanting letters on the right side, it indicates insufficiency or weakness of convergence in degrees equal to the small figures below it; if to the straight letters on the left side, excess of convergence. If the arrow points to one of the figures beyond the letters on either side of the card, it is necessary that the patient tell or point out on which side the figure is.



Ordinarily the lower arrow points to one of the letters between the upper arrow and D or H, from 0° to 4° or 7° of insufficiency. Such cases are about normal in convergence power, and the ordinary distance lenses should be prescribed in young people. If this small degree of weakness is found in presbyopes, the reading distance should ordinarily be about 14 inches or 36 cm. Variations at the distance of this test do not mean so much as in distant tests, except possibly when excess of convergence is found, especially if associated with esophoria for the distance, and, therefore, at this reading distance it is more difficult to distinguish the normal from the abnormal. If the arrow points up from slanting H to M on the right side, the convergence is fairly weak, 7° to 12°, and lenses should be given that will place the reading distance farther from the eyes—e. g., 15 inches, 38 cm. to 16 inches, 40 cm. If the insufficiency of convergence is greater than 12°, the reading distance should be at least 16 inches, 40 cm., or 17 inches, 43 cm., and sometimes prisms, bases in, not too strong in degree—about one-third the total weakness—should be given in preferably separate lenses for near, especially if prism exercises fail to give the desired relief. Prism exercises, prisms, bases out, often give great relief when there is insufficiency of convergence. When from 1° to 5° or 7° of excess of convergence is present, it is well to give the patient a slightly closer reading distance—e. g., 13 inches, 33 cm. If a still higher degree of excess of convergence is found, which is rare, give a close reading distance—e. g., 11 inches, 28 cm., or 12 inches, 30 cm. and sometimes, in the reading lenses, prisms, bases out. Of course, the prisms prescribed and changes made in the reading lenses should not affect the distant lenses; the condition of the muscles as to balance and power for distant objects should be noted, and the vocation of the patient be considered. Therefore, in determining the proper reading distance for a presbyope, or if prisms should be used, many things must necessarily be taken into account—e. g., a patient who has poor vision due to slight irregular astigmatism, beginning cataract, or other abnormal condition, because of the greater magnification, would prefer a fairly close reading distance, even if he did have weakness of convergence. However, this test need only consume a small fraction of a minute's time, and ought often to be helpful in suggesting the best distance for reading, and sometimes the need of prisms in the correction for near. Decentering accomplishes the same purpose as prisms. The changes in the lenses for young people should be made with due regard not only for close work, but also for distance, especially when it is necessary that they be worn constantly.

The conditions found by this test often suggest the employment of proper prism exercises, and even the necessity of operations. In cases where patients after reading, writing, sewing or other continuous use of the eyes for near work, complain of various symptoms of eye-strain, not only the strength of the lenses should be investigated, but, as just stated, the muscles should be examined, not only for their balance for the distance, but also for their rotating strength, and for their balance for near work; all these elements must be considered before attempting to determine the proper course to pursue.

All known tests for the balance of the muscles, either for the distance or for reading, unfortunately, depend on various means for suppressing the desire for single vision, since they prohibit fusion. And this is to be particularly regretted, as so much depends on the degree of this desire. This test shares this fault with all the others, but it is superior to the Maddox rod in examining the convergence for the reading distance, because it is easier to accommodate for a letter or figure than for a light, and the convergence is, therefore, more nearly normally stimulated by the accommodation. Of course, vertical imbalance can not be detected by this test.

The total convergence power, or duction power, both of which depend chiefly on the strength and relative position of the muscles, and on the desire for single vision, is found by tests in which this desire is not suppressed. These tests show what the patient can do when forcing the muscles under the stimulus of the fusion faculty—the desire for single vision—but have nothing to do with the position of rest. A patient with a strong desire for fusion, or single vision, may have marked ability to converge for a short time, or, for that matter, to rotate the eyes in any direction, just as a hypermetrope can accommodate, but he is likely to become tired by such forced convergence, just as a hypermetrope becomes tired by forced accommodation, if the eyes must, in order to secure single vision, be rotated considerably from what may be termed their position of rest for any particular distance.

The writer pointed out in a paper, "The Practical Application and Use of a Simple Test for the Latent Convergence Power" (OPHTHALMIC RECORD, July, 1904), that every time lenses are prescribed in cases of ametropia the relation between accommodation and convergence is necessarily changed, and that, therefore, a new adjustability of the relationship of these acts is necessary; otherwise diplopia or blurred vision would result. In the same paper he also drew attention to the fact that, as accommodation is gradually lost, so in many cases there is also a change in the convergence power. He also atttempted to make clear why lenses, by requiring more or less accommodation, vary the stimulation to convergence, and to explain other phenomena observed in the relationship between accommodation and convergence.

This instrument must be made so that the prisms are correctly placed and not rotated toward or away from each other. It is manufactured by F. A. Hardy & Co., Chicago.

Editorial.

THE SECTION ON OPHTHALMOLOGY OF THE A. M. A.

I want to speak a word to the RECORD family about the Atlantic City meeting of the A. M. A. First, as to headquarters: The Seaside Hotel has been assigned to us as headquarters and can easily accommodate all the members of the Section, provided applications for rooms are filed sufficiently early. The meeting place of our Section will be either in the hotel or in some near-by hall. It is not too soon to begin making arrangements for accommodations.

The work of the Section promises to be up to the standard, which means a great deal. Dr. Hess of Wurzburg, Germany, will deliver an address, "The Modern Views of the Physiology and Pathology of Accommodation," at some time during the session, probably on the evening of the first day. There will be two other addresses of a historical nature, one by Dr. A. A. Hubbell of Buffalo, the subject of which will be "What America Has Contributed to the Advancement of Ophthalmology." Another by Dr. R. A. Reeve of Toronto, the title of which will be "What Foreign Countries Have Contributed to the Advancement of Ophthalmology." These two addresses will add much to the interest of the coming meeting. At least two of the three addresses mentioned above will be delivered on the evening of the first day, instead of the usual banquet or smoker. Following the address that evening, the members will be invited to meet personally Dr. Hess and others who will be in line to receive them.

The scientific program promises to be very interesting and helpful from beginning to end. There will be a symposium on the *Treatment* of Cataract. There will be a collection of papers devoted to the surgical *treatment* of surgical ocular conditions, and still another collection of papers devoted to the medical *treatment* of medical ocular conditions. The list of volunteer papers has grown to considerable length, and only a few more papers could be received by the executive committee by the time this appears in print. The papers by invitation and the volunteer papers will be brought out in the pre-session reprints, and it is to be hoped that members who are not down for papers will read the reprints with great care and prepare themselves for most profitable discussions. The addresses will not be published until after they shall have been delivered.

The officers of the Section expect the meeting at Atlantic City to be more largely attended than any former meeting, and they have put forth every effort in the direction of making it profitable and pleasant to all who may attend. G. C. SAVAGE, *Chairman.*

Reviews.

A CURE OF CONVERGENT STRABISMUS BY ORTHOPTIC TREATMENT AT TWENTY YEARS OF AGE*

H. V. Würdemann, M.D., Milwaukee, Wis.

[Reviewed by F. B. Eaton, M.D., Portland, Ore.]

They who have read Worth's valuable work on squint will recall his statement that in his experience the "fusion faculty," which, he believes, has a definite cerebral location, is generally developed by the sixth year or not at all.

The case described by Würdemann would indicate that this is not only not an invariable law, but has probably many exceptions.

His patient, a well-educated man of 20, was able to describe intelligently the subject symptoms and had been the subject of an *alternating* convergent strabismus of 25° since childhood, with vision O.U. of 6/8, but had not binocular vision. He gave a negative history of diplopia, and none could be elicited by tests, with red glass, phorometer or stereoscope, but he saw double through the amblyoscope, when the light was properly graded, for a fraction of a second.

Under atropin V. O. U. = 6/9 and the squint diminished to about 15°. Full correction was given for general use.

After two months' treatment by wall-to-wall exercise, the amblyoscope and stereoscope, binocular vision could be accomplished, and finally perception of depth. Adduction, 20°; abduction, 12°; exophoria, 3°, and hyperphoria, 1° at 6 m., with 2½° exophoria at 0.30 m. In another month there was full binocular vision and the eyes constantly straight, except to the cover test. The final condition was: Eyes straight, exophoria 1° at 6 m., exophoria 5° at 0.3 m.

The reviewer considers this case instructive as a warning that the above dictum of Worth should not be assumed as invariably true, especially as the case was one of alternating squint, the very variety cited by Worth as generally offering no hope for the development of the fusion faculty, and hence precluding binocular vision.

The reviewer begs to submit, in this connection, a case of his own which, while it does not closely parallel that of Würdemann, shows that it is never justifiable to assume absence of the fusion faculty in strabismic adults.

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* Ophthalmology, July, 1906.

The patient, a girl of 17, applied, on Feb. 14, 1906, complaining of headache and aching eyes. Her health was perfect, but her mother stated that she had had squint since a small child. Objectively by deep color glass, screen test and parallax esotropia (squint) = 17°. No hyperphoria. For near, by stereoscope, esotropia of 14°. The amblyoscope showed the existence of perception of depth (stereoscopic vision). Patient fixed constantly with the right eye, the left squinting inward. Under cycloplegic, O. D. V. w. + 1.00 s. ○ — 1.25 cyl. axis 180 = 20/20; O. S. V. w. + 1.00 cyl. axis 90 = 20/15. Ordered. Feb. 26, 1906, by parallax esotropia still 17°. Fixes now with the left (better seeing) eye. Perfect fusion by amblyoscope. Reads and works easily *ad lib.*

Her office occupation, and finally the San Francisco disaster, through which the reviewer lost sight of her, prevented a final study of the case, but he believes that, were it not for the hard near office use of her eyes, the squint would have disappeared promptly.

Recurring to the views of Worth, it is pertinent to inquire how the fusion faculty could be developed in a child who had not binocular vision, since she squinted, for the hyperopia was moderate and the astigmatism symmetrical and equal in each eye. The natural inference is that something besides the refractive error, in view of the existence of a perfect fusion faculty, caused the strabismus. At all events the case, with that of Würdemann, clearly indicates that it is not safe to assume that all patients past the age of 6 years do not possess a partial or completely developed fusion faculty, whether diplopia is or is not present.

EFFECTS OF PASSIVE HYPEREMIA, AS SO-CALLED HEAD CONSTRICTION (ACCORDING TO BIER), UPON THE NORMAL EYE AND ON THE COURSE OF CERTAIN EYE DISEASES.*

Professor Hopper, Cologne.

[Reviewed by Reinhard Rembe, M.D., Chicago.]

Hopper made the experiment upon himself and minutely described the effects produced by head constriction, thus giving a very clear and exhaustive opinion on the subject. He gave a report of fifteen patients (seven male and eight female) ranging in age from 2 to 43 years, to whom this treatment was given for the following diseases:

Hay fever of the conjunctiva and nose, phlyctenular conjunctivitis, superficial vascular inflammation of the cornea, herpes of the cornea, corneal ulcer, interstitial inflammation of the cornea due to hereditary syphilis, traumatic irido-cyclitis, vaccination papules on the conjunctiva.

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* Klinisch. Monats-Bl. f. Augenheilk, Vol. ii, p. 400.

These were partly hospital and partly ambulatory patients, and all were discharged as cured. The constriction was made just below the larynx by means of a quarter-inch rubber band. Attached to one end is a skirt ruffler, on which hooks and eyelets may be used. The subjective symptoms were rarely disagreeable. Some patients after 24 hours of constriction complain of drowsiness and dull headache. Great care and supervision should be exercised, since individuals react very differently. Patients took very kindly to the treatment and seemed much interested in it. Objectively, there was no detrimental influence observed either on the disease or any of its symptoms.

Summary.—The so-called head or neck constriction (according to Bier) is not an indifferent procedure. Its technique is not at all difficult, especially if proper precautions are taken. There is very little danger to the inflamed eye, and in all serious eye troubles when other remedies fail this new method should be given a trial. A moderate constriction of several hours has an effect upon the coats and in a moderate degree upon the interior of the eyeball. The result of such treatment produces in a remarkable degree diminution of inflammatory pains. In a number of cases it seemed to produce resorption of the inflammatory products, while in others the results were questionable or negative. It also aids the absorption of atropin.

TREATMENT OF INCIPIENT SENILE CATARACT BY INJECTION OF IODID OF POTASSIUM.*

By Pflugh, Dresden.

[Reviewed by R. Rembe, M.D., Chicago.]

During a discussion on this subject at the Heidelberg Ophthalmological Society, Pflugh was requested by many of those present to give his experience and his method of administering this treatment for incipient senile cataract. He gives the iodid of potassium in the form of subconjunctival injections. The solution used is as follows:

Iodid potash, gr. 3½; sod. chlor., gr. 3½; water drs., 2½.

To 15 drops of the iodid solution is added one drop of a freshly prepared 1 per cent. solution of acoin. The eye is subdivided into five parts, and the injections are made in a new place each time. After cocainizing the eye, a few drops of the solution are injected beneath the conjunctiva, a quarter of an inch from the cornea. From 8 to 12 drops of this solution are injected at each sitting, and every third day powdered dionin is blown upon the conjunctiva bulbi with a powder blower. The treatment should be carried out for four weeks, followed by intermission of two weeks. Treatments may be resumed as frequently as indications require. The general system should be carefully watched.

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* Klin. Monatsblatter f. Augenheilkunde, Vol. ii, p. 400.

Summary.—Pflugh recognizes iodid of potassium as a valuable remedy in the treatment of incipient cataract and recommends its use under the following circumstances: If a patient has lost an eye either as the result of operative measures or other causes or has some systemic disease which interferes with or prevents an operation.

(Too much should not be expected from this potassic iodid treatment. Several years ago it was advocated in France for the clearing up of lenticular opacities, to be used in the form of collyria, salve and eye baths, but on account of its painful effects it was soon abandoned. May we hope for better results from these painless subconjunctival injections.—R. R.)

THIGENOL ROCHE, A NEW EYE REMEDY.*

A. Fortunati, Naples.

[Reviewed by R. Rembe, M.D., Chicago.]

Thigenol in 10 per cent. aqueous solution has been extensively used at the Naples Eye Hospital for chronic dacryocystitis. The strictures are first cut and the lacrimal sac washed out with the solution. In nearly all cases the use of this remedy has been followed by a subsidence of the inflammatory symptoms. Thigenol was used in the form of a salve in the treatment of marginal blepharitis. Thigenol, vaselin each 5 parts, ceræ albæ 2.5 parts. At night the crusts are first soaked with a solution of boric acid and removed, and then the salve thoroughly applied. Ordinary cases were rapidly cured, while obstinate cases showed marked improvement. The author claims that thigenol salve has many advantages over the yellow oxid of mercury ointment of Pagenstecher, in that it has analgesic effects, is less irritating and is not contraindicative when corneal ulcers are present. In herpes of the conjunctiva thigenol was either applied in the form of 50 per cent. to 80 per cent. ointment or in powder form. To avoid the slight burning sensation of the conjunctiva that occasionally occurs. he recommends instilling first a drop or two of a 2 per cent. solution of cocain. It is also more simple in preparation and is not so unstable as the yellow oxid ointment.

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* Archive di Ottalmologia, No. 11.

Thigenol is manufactured by the Hoffman Chemical Works, in Basle, Switzerland. It is soluble sulphur compound containing 10 per cent. organic sulphur, completely soluble in water, alcohol, glycerin and collodion. Therapeutically it is somewhat analogous to ichthyol.

TREATMENT OF GLAUCOMA WITH THE HIGH-FREQUENCY CURRENT.*

By Truc, Imberg a Marques.

[Reviewed by R. Rembe, M.D., Chicago.]

The writer assumes as proven that currents of high frequency possess the power to reduce increased blood pressure. Based upon this they tried this current upon a patient with arteriosclerosis who had glaucoma and on whom an iridectomy and internal treatment had no effect. Eleven treatments within thirteen days were given. Each treatment of from three to five minutes' duration reduced the blood pressure from 25 to 17½, according to the sphygmomanometer and at the same time lessened the tension in both eyes. The effect was that the patient, who had only light perception before the treatment, regained sufficient vision to count fingers at several meters' distance.

May this improvement in vision not have been a coincidence? Though the new method of treatment seems feasible and worth trying, especially as no bad effects followed the use of the high-frequency current.

Eyesight Test for German Railroad Employés.—According to some new regulations the employés of the railroads in Prussia—which are government institutions—must have their eyesight tested when they enter the service, again when they enter on another branch of work which makes greater demands on the eyesight, and again when appointed to any official position. Besides this, the eyesight must be tested anew every five years, at which time the men are also to be examined for ocular and constitutional affections, and also for injuries to the head. In certain branches of the service the employés are allowed to wear glasses to bring their vision to the proper standard, but artificial aids are not permitted to switchmen and bridge-tenders, signal men, locomotive engineers and stokers, conductors or despatchers.

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* Revue general d'Ophtalmologie, No. 3.

Reports of Societies.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting Dec. 18, 1906.

Dr. G. E. de Schweinitz, Chairman, presiding.

TREATMENT OF GLAUCOMA SIMPLEX (IRIDECTOMY, SYMPATHECTOMY AND MYOTICS).

Dr. Frederick Cheney, of Boston, read this paper by invitation. He said that normal tension as determined by palpation should not in any way contraindicate operation in glaucoma simplex. A tension might be normal throughout the entire course of the disease and nevertheless be a pathologically high tension for the eye under consideration. The fact that a glaucomatous cup has been produced should be sufficient proof that the optic disc is subjected to greater interocular pressure than it is capable of resisting, and also that, if the disease is to be brought to a standstill, it is essential to lessen the so-called normal tension and to make it subnormal.

Dr. Cheney thought that iridectomy was the rational treatment and if we could operate as early in this form of the disease as we are enabled to in many of the acute congestive cases the results would be capable of a more favorable comparison. In a disease which is often so slowly progressive, the life probability, as indicated by the patient's age, general physical condition, and ancestry, may be the deciding point in a given case. An eye which does not offer the most favorable conditions for operation may nevertheless demand iridectomy in early life, and an eye that in an elderly individual seems in every way favorable for operation is often best let alone. The first and most important question, therefore, to be answered in each individual case by the man who is favorably disposed toward operation is: Are the chances of retaining vision to the end of life better with iridectomy or by the continued use of myotics? In many of the cases met with in the middle period of life, say from the forty-fifth to the sixtieth year, the problem may be a most difficult one to decide. The chances of prolonging vision by myotics to the end of life is only exceptionally favorable, and there is, on the other hand, the possibility of an operation destroying an eye at a time when its vision is often of the greatest importance to the continued welfare of the individual and his family. With useful vision still remaining in both eyes, iridectomy should, he believed, be advised in one, and the question of the second decided after a sufficient time had elapsed to determine the success or failure of the first.

In monocular glaucoma the question of operation on the second eye which is slightly, if at all, involved, is an important one and was ably presented by Dr. de Schweinitz, in a paper at the meeting of the American Ophthalmological Society in 1901. His suggestion in regard to simple glaucoma was: "In cases of chronic simple glaucoma, if any periods, however temporary, of increased intraocular tension can be demonstrated according to the methods already suggested, operation should be performed even if central and peripheral vision are perfectly intact. Even when these are normal careful perimetric examination may reveal a scotoma of the character already described; so, operation should not be postponed."

If one eye has been operated upon, if useful vision remains, and if a sufficient time has elapsed to make it fairly certain that the process has been brought to a standstill, if the patient's age and other conditions make it probable that a considerable number of years of life are reasonably to be expected, then Dr. Cheney would certainly agree with Dr. de Schweinitz in advising operation on the second eye at the earliest possible moment after all doubt had been removed as to the existence of the disease. So favorable a condition of affairs, however, is only exceptionally met with. As a rule, in his experience when the disease is not found to be well established in both eyes, one eye is blind, or so nearly so that there is little or no chance of operation giving useful vision. When one eye is blind and the disease beginning in the second eye, myotics are, as a rule, he believed, to be preferred in the latter part of middle life and old age so long as the disease remains apparently stationary or is very slowly progressive.

While Dr. Cheney believed that a successfully performed iridectomy approaches nearer what might be regarded as a cure of simple glaucoma than any other form of treatment, he nevertheless operates on the smaller proportion of the cases which come under his care. A certain number of patients refuse operation. In the other the eye presents conditions unfavorable to operation, and, again, in a disease which is essentially one of latter middle life and of old age, myotics offer such a favorable probability in many cases of prolonging vision for years or to the end of life that one often hesitates to recommend an operation which may end disastrously. In a certain percentage of the cases met with the pupil is well contracted, and the value of myotics under such conditions is a debatable one. It is to be remembered, however, that these cases are usually seen by the oculist under conditions most favorable to a small pupil; that is, good illumination. Good illumination is not constantly present, however, and especially is this so when that frequent affliction of old age exists, insomnia. Hours of wakefulness in the dark or dim light may be accompanied by hours of more or less pupillary enlargement and perhaps some increase of tension. Myotics can certainly do no harm even if the pupil is contracted to its smallest size, and periods of dilatation may thus be prevented.

Dr. Cheney reported two cases of double superior cervical sympathectomy, but did not think the results could be considered as favorable to the operation.

In opening the discussion Dr. Posey said that the issue under discussion was expressed by the question, "Is simple chronic glaucoma combated in its early stages best by operation or by other measures?" He referred to a paper which he had read at the last meeting of the American Medical Association in which he had called attention to the very satisfactory results which attend the use of myotics in chronic glaucoma, and urged their more intelligent and persistent administration. The action of these drugs was dwelt upon and their value when properly applied was demonstrated by citing cases illustrative of various types of chronic glaucoma, and the assertion was made that if it were possible to compare an equal number of cases which had been subjected to myotics properly administered over a similar period, the comparative merits of myotics and iridectomy would be shown to be far greater in favor of the former.

To obtain the maximum amount of benefit from myotics Dr. Posey insisted, however, upon their continuance and their proper administration, in the manner, in fine, which had just been described by Dr. Cheney, and wished to make it clear that if inflammatory symptoms should arise at any time, iridectomy should be performed. He said that for him the one indication for operation was the development of symptoms of a congestive nature, but he contended that if the pupil is kept constantly contracted almost to a pin-point, and proper care is given to the general health and the use of the eyes, that such symptoms will arise but rarely in cases of a purely chronic type.

He found justification for the pursuance of this line of treatment in a statistical study of a large series of cases of chronic glaucoma treated with myotics which had been compiled by Dr. Zentmayer and himself from Wills Eye Hospital clinics, and by the continuous observation of a not small number of cases in other hospital and private practice.

If myotics have the power to stay the glaucomatous process, can one, therefore, feel justified in advising operation in cases of chronic glaucoma which are free from inflammatory symptoms? It may be said repeatedly and by eminent observers that iridectomy is practically without danger, and yet surely no surgeon of experience really believes that it is a simple or harmless procedure. It is, of course, true that few eyes are actually lost from the operation, but would not the statistics of a hundred cases of iridectomy for glaucoma show lenticular haze in greater or less degree in a very considerable proportion?

Comparative statistics which show the results of operation and myotic treatment in a large number of cases can alone solve the problem, and here lies the difficulty, for the disease is comparatively uncommon, and since, as a rule, it affects those who are advanced in years, death often ensues before the observation can be extended over many years, even where the subjects of the disease remain constant in their attendance on one surgeon, so that one observer can scarcely acquire sufficient data from his own practice to draw conclusive results.

Dr. Posey suggested that a committee be appointed from the section for the purpose of collecting data from its members, of cases of simple chronic glaucoma which they have had under observation for five years or more in their own practice and which they have subjected to operation or myotic treatment.

Dr. S. D. Risley said that there could be no question that there was room for two opinions as to the relative value of myotics or iridectomy in the treatment of glaucoma simplex. He thought it possible, however, that the uncertainty which surely existed in the minds of many experienced surgeons was the result of the ill-defined diagnostic line of demarcation between certain forms of chronic glaucoma, always threatening to pass into the congestive or inflammatory type, on the one hand, and, on the other, the cases of atrophic nerves with glaucomatous cupping and no demonstrable increase of tension as compared to that of the average eyeball. Dr. Risley recalled the fact that not many years ago no ophthalmic surgeon of note even considered operative interference in simple glaucoma, regarding it not only as useless but harmful. The question of iridectomy in these patients was not open to discussion. But to-night the conservative paper to which all had listened with great interest, gravely discussed it, with a distinctly favorable trend toward iridectomy. This fact was a strong indication that experience had not condemned operative interference. Dr. Risley said that his own experience had led him to favor iridectomy. Indeed, the circumstances were exceptional in which he could feel that he was doing his full duty by his patient if he did not advise it as soon as the advancing symptoms made clear the nature and obvious progress of the disease. While it could not be denied that he had repeatedly seen the disease held in check by the faithful, judicious use of eserin salicylate, still there had always been more or less advance in the symptoms. He considered it a refinement of cruelty to consign these patients to the life-long anxiety of possible blindness, or operation, either or both of which were suspended like a Damoclean sword over their heads, of which the instillation of drops morning, noon, and night for years kept them in constant terror. With this the rare accidents attending skilfully performed iridectomy were not to be compared. Dr. Risley regarded iridectomy, however, as useless if not performed with a faultless technic. To his mind the coloboma should include the root of approximately one-sixth of the iris. He had but rarely seen accidents follow the operation in simple glaucoma, and the lens, if not injured, had rarely become opaque, unless the process had already begun.

Dr. Hansell said that the successful treatment of glaucoma or of any other disease could not be empirical or accidental, and must be based on an understanding of the nature of that disease. The etiology, the morbid changes in the affected tissues, its relation to other local or general affections, and particularly its dependence upon them should be observed. Moreover, the number of cases carefully studied should be sufficient to form a basis for classification.

In his study and teaching of the subject of glaucoma he had adhered to the classification generally adopted for the primary forms, the acute and chronic inflammatory and the simple or non-inflammatory. For years he had had scruples against including the latter in the category of the glaucomas, for in none of his cases had he been able to determine the presence of the attributes of glaucoma. The excavation had been a constant symptom, and blindness had been the invariable outcome in those patients who had not died of an intercurrent disease, but increased intraocular tension had never been a constant symptom, and, indeed, he had not been able to convince himself that it ever existed in a degree that could not be considered to be within physiological limits. He had come to believe that Horstman is correct in relegating the affection back to Graefe's classification as "amaurosis with excavation."

We are told that all the signs and symptoms of inflammatory glaucoma are the direct result of pressure, whatever might have been the original cause of that pressure. Now, when we compare the clinical picture of inflammatory glaucoma with that of glaucoma simplex, we find that, with one exception, the signs of intraocular pressure are wanting. We have no pain, no steamy cornea, no shallowness of the anterior chamber, a contracted rather than a dilated pupil, no transient blindness from paralysis of the retina, and estimation of the tension by the most experienced fingers or the most accurate tenometer will not prove beyond question that the tension is higher than normal excepting in high myopia or those cases in which the blood-pressure is exalted or, where the sclera, by reason of age or loss of elasticity from other causes, is more rigid than normal. Again, the etiology of glaucoma simplex is even more obscure than the etiology of the inflammatory form. A consideration of a partial list of causes of inflammatory glaucoma would probably lead to their rejection from the etiology of simple glaucoma.

Moreover, the treatment by iridectomy, so valuable in the inflammatory forms, had been in his hands as well as in the hands of others without value in simple glaucoma. He had performed the operation and he supposed he would continue to do so until something more logical is suggested, for the reason that it has been recommended by the highest authorities and he might blame himself if he left it undone. The value of eserin, universally prescribed, is problematic. If there is no increase of tension and the pupil is small, the danger of the blocking of the angle of the anterior chamber is no greater than in an eye not suspected of being glaucomatous. The contraction of the pupil and the forced activity of the ciliary muscle induced by eserin would seem to have but little place in the therapy of simple glaucoma. Extirpation of the cervical ganglia, in his limited experience, had also been without effect in relieving blindness or even in checking the advance of the disease.

Simple glaucoma is certainly not much glaucoma and even less simple. Its clinical history is well known, the structural changes are constant, but its etiology, its relation to the general nervous system, and its successful treatment are yet to be discovered. He believed it to be akin to other imperfectly understood forms of atrophy of the optic nerve and a symptom of a progressive disease of the nervous system.

Dr. Zentmayer said that from personal observation alone he would be unable to decide as to the relative merits of the two principal methods of procedure under discussion, as in his experience simple glaucoma, always infrequently met with, is yearly becoming less common. As pointed out by Dr. Hansell, we know so little definitely as to the etiology of this affection that it is useless to speculate as to the cause for this, but it had occurred to him that the careful refraction work that has been done in this country in the past thirty years had been a factor. His earlier views as to the comparative value of iridectomy and eserin in the treatment of simple glaucoma were formed as the result of clinical study to which Dr Posey has referred. His later experience had not led him to radically change the opinions there expressed.

From what has been said to-night and from other sources it would seem to him that the counts against iridectomy may be stated to be: that statistics show that iridectomy is not infrequently followed by immediate and permanent impairment of the visual functions, not dependent upon trauma; that it has been the experience of most operators to have had rapid development of cataract after what appeared to have been a technically correct operation; that the danger from infection, although slight, is not to be ignored; that there is produced a considerable degree of changing astigmatism.

Against the myotic treatment we have: that it favorably influences a smaller percentage of cases than does iridectomy (myotics, 80 per cent.; iridectomy, 90 per cent.); that the treatment calls for a degree of persistence and a discipline not always possible to obtain; that at times it sets up a very troublesome conjunctivitis which may require the withdrawal of the drug.

Weighing these objections, and taking into consideration that to the postoperative use of eserin must be attributed some of the benefit now credited to the iridectomy, he believed that the myotic treatment should be the method of choice, and that iridectomy should be reserved for special cases. If the patient were one who would probably fail to carry out the rather irksome myotic treatment; or one who could not be kept under constant observation, he believed it would be best to do an iridectomy. If in spite of the use of myotics the disease continued to progress, and if the disease occurred in a comparatively young individual, he would advise iridectomy. In general the class of patients one meets with in the dispensary will give the larger percentage of cases in which iridectomy is suitable, and private practice a larger percentage in which the myotic treatment will best serve.

The value of any method of treatment will be enhanced by attention directed toward the vascular and general system, abnormal conditions of which play an important part in the production of this affection.

Dr. de Schweinitz, referring to those cases of chronic glaucoma with apparently no increase of intraocular tension, thought that careful observation would always demonstrate at some period of the disease periods of increased tension. The symptom may not be constantly present, indeed, is often absent, or it may be present at one portion of the day and not at another, or be present during the night and not during the daytime, and he urged a more thorough investigation of this phenomenon. Referring to the field of vision in this disease, Dr. de Schweinitz was of the opinion that no satisfactory results were obtained until it has been investigated in a much more thorough manner than was commonly employed; in other words, that even if perimetric examinations with ordinary white test-objects were alone employed, defects in the field of vision and the presence of scotomas might not be discovered which would be uncovered if, for example, the method of Bjerrum was employed, or if the field of vision was mapped under reduced illumination, or if the light-sense of the periphery of the retina was tested, for example, with quadrants of light gray, having four-fifths of the intensity of the white card on which they are placed, such, for example, as have been designed by Ward Holden. The importance of the discovery of these defects by these delicate tests are early in the disease and the danger of assuming that a field was continuing to be normal because defects were not found by the ordinary comparatively coarse tests were pointed out.

Dr. de Schweinitz fully agrees with those who believe in the value of myotics, and in cases unsuited to operation, either because of the age limit or on account of surrounding conditions, ocular and otherwise, they were of the utmost importance. Dr. de Schweinitz insisted on their systematic use, so that the pupil is kept contracted, and if possible, especially in elderly persons, at least one instillation should be made during the night. He agreed with Dr. Cheney that pilocarpin yielded more satisfactory results than eserin in this disease, or, at least, equally satisfactory results with less disagreeable consequences. He was, however, unconvinced that myotics were always preferable to iridectomy in so-called simple glaucoma, which had by careful study been differentiated from that disease with which it was most often confounded, namely, some form of optic nerve atrophy with cupping. He granted all the disadvantages and dangers of iridectomy, but, even taking them into consideration, he felt satisfied that in a certain number of cases the disease was not safely entrusted to myotic treatment, and that a carefully performed iridectomy, if it was sufficiently peripheral and technically correct, and which need not be a broad one, was likely longer to hold the disease in check than medicinal measures. He thoroughly agreed with Dr. Cheney, however, that it was not necessary to perform iridectomy simply because the disease existed, but that each case must be submitted to the most careful study, and the question of myotic treatment versus iridectomy decided upon the results of this study. He called attention to the early signs of the disease, to the fact that it probably appeared long before it was discovered with the ophthalmoscope, and particularly to the early depreciation of light-sense, as had been so well described by Wahlfours. Dr. de Schweinitz also called attention to the fact that many cases of so-called chronic glaucoma had reached the age in which peripheral striæ in the lens were apt to appear, and that it was possible that in some of those cases in which chronic glaucoma, as is so frequently the case, takes on an acute process and passes into a congestive glaucoma, might be due to swelling of the cataractous lens.

Dr. Ziegler said that observation of his own patients and those of other surgeons who had been treated by myotics had led him to the conclusion that operation offered the best chances for holding the disease in check. He referred to patients in whom after iridectomy the vision had been preserved for many years; and to one case particularly in which the diagnosis had been uncertain between simple glaucoma and atrophy of the nerve with cupping; five or six years later the patient developed an attack of acute glaucoma, and, despite operation, became blind. Recently he had been impressed with the value of sclerotomy. In some cases he had done an iridectomy on one eye and sclerotomy on the other, and he thought better results were obtained by the sclerotomy. In a few cases he had performed both operations on one eye. In sclerotomy there is less danger of intraocular hemorrhage, and the operation is certainly to be preferred where vascular disease makes such a disaster to be feared.

Dr. C. A. Veasey stated that, among men of experience, it had always seemed to him that one followed that particular line of treatment in any given disease which had proved in his own practice the most effective. He had always been guided in the question of operative procedure more by the condition of the visual field than by any other one symptom. If the use of myotics and optic nerve stimulants failed to check the progress of the disease, and the visual field continued to contract, or scotomata appeared, he usually advised operation, and his preference was for iridectomy. On the other hand, if the field remained comparatively stationary, no scotomata appeared, and central vision continued good, the myotic treatment was continued indefinitely. If the patient was very old and had, in all probability, only a few years in which to live, and it was likely that useful vision would be held during life, or if the patient was not in good physical condition to recovery from operation, the medicinal treatment was employed. Dr. Veasey added that his experience with cases in which scotomata had appeared and the visual field was constantly contracting was, unfortunately, not so good when the myotic treatment was employed as that of some of the preceding speakers. In fact, most of such cases lost their useful vision in a few years, so that upon the first appearance of such symptoms he advised operation, other conditions being favorable, because in about 50 per cent. of these cases good visual conditions were maintained by this procedure.

Dr. Cheney, in closing, said that the question of subnormal tension in glaucoma simplex was an interesting one, and while it was a condition which hardly seemed compatible with this disease, it would, he was confident, be occasionally met with. He had been especially interested in Dr. Posey's cases. Through his kindness he had seen one of his patients every summer for the last five years, and the results, as to the condition of field and vision, had certainly been everything which could be desired up to the present time. There is one factor which must not be lost sight of, however, in drawing conclusions as to the value of myotics, and for that matter of iridectomy as well, and that is the often exceptionally slow progress of glaucoma simplex. It is probable that in many cases the disease has existed for eight, ten or more years before the patient is conscious of the fact and consults an oculist. That is, there is a slowly increasing cup of the disc long before there is a contraction of the field or failure of central vision. If one discovers this early cupping during the routine ophthalmoscopic examination of refraction cases, it is, of course, desirable to advise some form of treatment, but in such cases the entire credit must not be given the remedy or operation, even when the disease apparently comes to a standstill for a considerable period of time.

EDWARD A. SHUMWAY, M.D., *Clerk of Section.*

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of Dec. 22, 1906, at Colorado Springs.

Dr. E. M. Marbourg presiding.

Dr. E. R. Neeper of Colorado Springs presented cases as follows:

ALBUMINURIA WITH HEMORRHAGE INTO THE VITREOUS.

CASE 1.—Mrs. G. D. P., aged 31, mother of two healthy children, 4 and 7 years old, had first presented herself for ocular examination Nov. 23, 1906, when she reported that eleven days before she noticed a blurring before the eyes, and four days later a dark spot appeared before the right eye. R. V. = 20/120 + L. V. = 20/30 —. Large hemorrhage in right vitreous. During the third month of her first pregnancy she had become "near-sighted," and could not read or sew without eye-strain. After delivery the eyes improved. For almost the entire time of her second pregnancy she had been troubled with asthenopia, and a rash on the breast and abdomen during the last of the lying-in period. Relief again followed delivery, but asthenopia reappeared in two or three months. As a child she had severe headaches, and menstruation was delayed until 16. Four years ago she was treated for enlarged thyroid and floating kidney, with benefit. Urinalyses were not made during the first pregnancy; and during her second confinement and up to Nov. 22, 1906, several such examinations of single moving specimens gave negative results. On Dec. 4, 7 and 21, 1906, albumin was found as follows: .015 per cent., 0.2 per cent, trace, respectively. On December 4 there was severe pain in the right eye lasting two hours. December 18, R. V. = 20/80 — ¼ with — 1.00 ⌢⌣ + 2.00 cy. ax. 90°. L. V. = 20/20 + with — 0.25 ⌢⌣ — 1.25 cy. ax. 180°. Hemorrhagic débris in the right vitreous was marked, but had been observed gradually to lessen. With high tension pulse and albuminuria, Dr. Neeper raised the question of the advisability of having the patient operated under a general anesthetic, for badly lacerated perineum and cervix, cystocele, retroflexed and prolapsed uterus; also as to the propriety of preventing future pregnancy.

Discussion.—In support of operation under general anesthesia, Dr. Neeper cited a case with impaired health and vision, slight albuminuria, red corpuscles 3,000,000, leucocytes 15,000, in which decapsulation and anchoring of the kidney had restored both general health and vision.

Dr. Black advocated Edibohl's operation, and said he thought the circulatory condition was that of a dilated right heart, passive congestion and low blood pressure, and would advise against future pregnancy. In the last opinion many members concurred, none disagreeing.

AMBLYOPIA FROM MACULAR DEGENERATION.

Case 2.—M. L., girl, aged 10 years, born at seven and one-half months, after her mother had driven behind a fractious horse. Much careful nursing was necessary for many months. She was always delicate and very nervous. Her younger brother was healthy and robust. Her eyes had never been strong. She was first seen March 26, 1905. Her family history was splendid. R. V. = 20/160 with + 0.50 cy. ax. 90° = improvement. L. V. = 20/160 with + 1.00 $\overset{\frown}{\smile}$ — 3.00 cy. ax. 150° = 20/20 —. There were many degenerative changes in the right macular region and hyperemia of the left fundus.

Discussion.—Dr. Black suggested examination of heart and circulation for probable causation.

RECURRING CORNEAL ULCERS.

Case 3.—Mrs. D. B. M., aged 56; healthy housewife, had first been seen June 20, 1906, with a large epithelial ulcer 2 mm. from the superior limbus of the left cornea, with much pannus and a history of but little pain during the several months that the eye had annoyed her. The whole bulbar conjunctiva took fluorescin stain during the first two months of treatment. This disappeared after persistent use of calomel internally. During the six months the eye had been under treatment it had taken the stain at seventeen different places, but always on the upper half of the cornea. The eye had been subnormally sensitive to irritating medication, but was gradually assuming normal sensation. The ulcers were appearing less frequently and were gradually yielding more readily to local iodin applications and yellow oxide ointment.

BULBAR FOLLICULAR CONJUNCTIVITIS.

Case 4.—Mrs. A. J. H., aged 47, who had complained of photophobia and increased lacrimation for than a year, was first seen May 29, 1906, with firm projecting follicles covering the entire right bulbar conjunctiva, being irregularly spaced 1 to 2 mm. apart. There were several phlyctenules at the nasal limbus, and the nasal third of the corneal epithelium had much the cracked appearance of an alligator hide. There was uniformly increased injection of all bulbar vessels, but that of the subconjunctival ones was most pronounced. Several serous crusts were imbedded in the lid margins, which, when removed, left pronounced raw-appearing pits.

These crusts had reappeared several times without any increase of other symptoms. The skin of the nose, especially of the lower two-thirds, was highly inflamed, alligator-cracked and thickened to several times the size of the normal nasal walls, giving that organ a fist-like appearance as compared with the normal tapering nose. When first seen fluorescein would not stain the cornea, but on June 22 and November 3 small stains were noticeable on parts of the nasal two-thirds. A high refractive error was observed. She had given birth to three unhealthy living children, had one miscarriage at three months, and was habitually constipated and rheumatic. All her symptoms had varied, but on the whole there had been a gradual improvement. All inflammatory conditions were intensified after waiting in the sun for a circus parade. The greatest improvement had come since using a liberal mixed treatment.

PENETRATING WOUND OF EYE FROM GLASS GAUGE EXPLOSION.

Case 5.—C. M., aged 22, locomotive fireman. On Dec. 10, 1906, a water glass on his engine had burst immediately in front of his face and flying glass struck the right eye and its appendages. This eye was blinded for one hour, when the sight cleared and he worked until the morning of the 13th, when vision was reduced to light perception. Five days after the accident, R. V. = fingers 1 ft., there was moderate chemosis of the lids and globe, all vessels were highly injected, the pupil was slightly contracted and there was no pain except a scratching sensation at a scleral wound which bulged about 1 mm. and occupied a generally transverse position about 3 mm. long, midway between the nasal limbus and caruncle, and contained apparently bog pigment and vitreous, and was completely closed to probe-point. A hazy line on the cornea divided it into lateral halves, but fluorescein would not stain this. The vitreous was more hazy than one week later. The lower part of the cornea and anterior lens capsule were steamy. On the 16th several deposits were clearly defined on Descemet's membrane and there was slight hypopyon. On the 18th two pus deposits had formed on the anterior lens capsule and a finger-like deposit stood out from the nasal pupillary margin of the iris. One of the deposits on the anterior capsule and the hypopyon had practically disappeared when shown before the society, while the remaining deposits were reported greatly diminished. The pupil responded only fairly to atropia. R. V. = fingers at 10 ft.

Dr. J. A. Patterson of Colorado Springs presented the following cases:

ANASTOMOTIC VESSELS ON THE OPTIC DISC, WITH CEREBRAL LESIONS.

Case 1.—G. W. H., aged 57, first seen in June, 1906, with a history that on rising, Thanksgiving Day, 1902, he found that he had no sight in his right eye. One month subsequently to his first visit he had an attack of partial aphasia, which left some permanent hesitancy in speech. This attack was preceded by numbness of the tongue, but no arm or leg phenomena. It was recently learned that this case had been shown before this society four years ago by another member, when his diagnosis of embolism of the central retinal artery of the right eye was concurred in. There was now blue-white optic atrophy with R. V. = fingers 2 inches. The lower retinal vein was contracted and showed a spot of entire obliteration where the first branch was given off, the branch being the obliterated portion. A ciliary artery emerged from the lower portion of the disc, and anastomosed with the obliterated branch about the point of obliteration. A branch of this ciliary artery ran back on the lower part of the disc, where it formed many spirals like intermingled earth-worms. The retina was hazy, and between macula and nerve were many pinhead-sized exudates. The superior temporal artery showed distinct thickening of its coats. The left eye-ground was seemingly healthy, except that there were evidences of an absorbed hemorrhage at a bifurcation where the lower temporal vein under the macula gave off its first branch. L. V. = 5/9 brought to 5/6 partly with + 1.00 spherical. The field showed distinct nasal hemianopsia, with preservation of the point of fixation, and 10° of nasal side of it. There was distinct contraction for form, and red was only 10° from the fixation point. There had therefore most likely been a hemorrhage involving not only the right side of the brain, but evidently one at the chiasm also, with partial destruction of some fibers of the left optic nerve. The patient's condition was one of sluggish mentality and forgetfulness.

LOSS OF FUSION AT INFINITY.

Case 2.—Miss G. G., aged 23, had complained of headache from use of eyes and nausea in the morning unless she wore glasses. All symptoms were aggravated by close work. Full correction under mydriatic: R. E. 0.25 ○ 0.25 cy. ax. 180° V. = 5/5. L. E. 0.50 ○ 0.25 cy. ax. 75° V. = 5/5. Attempt to measure phorias disclosed inability to obtain fusion at infinity. Fusion impossible with Worth's amblyoscope. There was hyperphoria at 8° — at 20 cm.; this was so variable as to make its exact estimation uncertain.

ALTERNATING CONVERGENT SQUINT WITH HYPERPHORIA.

CASE 3.—A. P. G., aged 7 years 9 months, seen in March, 1906. R. E. V. = 5/10 with + 0.75 ⌣ + 0.50 cy. ax. 90° V. = 5/5. L. E. V. = 5/7.5 with + 0.75 ⌣ 0.50 cy. ax. 105° V. = 5/5. There had been alternating convergent squint of very high degree. When the non-fixing eye moved inward it was carried upward. On April 3, daily trials with the Worth-Black amblyoscope were made, but fusion was unobtainable. On May 3 fusion with Bull's stereoscope was obtained, but there was right hyperphoria of 4° or more. On May 5 tenotomy was done upon both interni and upon the inner half of the superior rectus of the right eye, after the method of Edward Jackson. Following this there was great improvement in appearance and fusion at reading distance was obtained. The eyes remained straight except that the right was a trifle higher than the left. On August 17 another tenotomy was made upon the right superior rectus, with only slight improvement. The case was presented to show the results of stereoscope versus amblyoscope, and the desirability of persistence under apparently hopeless conditions.

Discussion.—Dr. Swarbourg advocated Fox's operation of taking out an elliptical piece of Tenon's capsule to overcome the hyperphoria. Dr. Libby had refracted this child when 2 years old under 1 per cent. atropin sulphate, finding 1.50 D. of hyperopia, with alternating convergent strabismus, which the parents said dated from birth. Through the child's wilfulness and the parents' lack of coöperation, the glasses had been broken and discarded in a few days. In this case typical belladonna poisoning was noted after two instillations of the cycloplegic in each eye. The first was dropped in during the evening and the second at noon of the following day. Three hours later the intoxication was marked, but it had passed off completely in a few hours. Several similar cases had apparently demonstrated that 1 per cent. atropin could not be used one mile above the sea with the same immunity as at sea level. Dr. Libby reported a child of 11 months, with alternating convergent squint, one eye doing most of the fixing, whom he had lately examined under homatropin, 4 drops of a 30 per cent. solution instilled twenty-five minutes apart, and the following day under one drop of 1 per cent. solution of atropin sulphate. Two D. of hyperopia was developed, this correction prescribed, and one-half per cent. atropin ordered in both eyes for once daily for one week, followed by once daily in the fixing eye for one or even six months, if necessary.

CENTRAL CHORIOIDITIS.

Case 4.—Woman, married, aged 56, with double central atrophic retino chorioiditis, pathological changes being principally in the pigmented layer. R. E. with + 2.50 ○ + 1.00 cy. ax. 180° V. = 5/5 +. L. E. with + 2.50 ○ + 1.00 cy. ax. 180° V. = 5/5, 90 per cent. Sketches of the eyegrounds in the beginning stages were shown.

CONGENITAL CATARACT AND ATROPHIC IRIDES.

Case 5.—History of congenital cataract, atrophic irides and subsequent glaucoma in a young man was narrated, and gross and microscopic sections of the enucleated eye were shown.

Discussion.—Dr. Coover advised a blood examination to ascertain the opsonic index as a guide to therapeutics.

Dr. Black thought the case one of autoinfection, and advocated urinalysis to determine the amount of indican.

Dr. Friedmann considered arteriosclerosis or syphilis to be the cause.

Dr. Patterson believed it to be arteriosclerosis, and said that the blood pressure was normal.

Dr. Libby called attention to one spot of very slight macular pigmentation.

Dr. Walker suggested giving iodid of potassium for the arteriosclerosis that he believed to exist. George F. Libby, *Secretary.*

RESOLUTIONS ABOUT BLIND ADULT PASSED BY THE COLORADO OPHTHALMOLOGICAL SOCIETY.

The following resolutions, introduced by Dr. C. E. Walker, were passed:

Whereas, There are an unusual number of accidents in Colorado causing blindness in men engaged in mining and manufacturing industries; and,

Whereas, These blind adults are almost invariably poor, and are thrown upon the charity of the sympathetic public; and,

Whereas, There is no provision for the care and instruction of the blind, except for children; therefore, be it

Resolved, That the Colorado Ophthalmological Society, in full cognizance of this need, recommends that the Committee on Public Policy and Legislation of the Colorado State Medical Society endeavor to influence the General Assembly of Colorado to make an appropriation for the construction and maintenance of an institution for the care and education of the blind adults of Colorado.

Adjourned.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of Dec. 11, 1906.

Dr. George F. Fiske, President.

Dr. G. F. Suker.—Ptosis sympathica in young child, marked by incomplete paralysis of the levator and flushing of the lid-skin; the globe small and of minus tension, with no disturbance of motility.

FURTHER REPORT ON THE SUCCESSFUL USE OF TUBERCULIN IN A CASE OF IRITIS TUBERCULOSA.

Dr. A. E. Bulson, Jr., Ft. Wayne, Ind.—Both the local and general diagnostic tuberculin reaction were obtained early in the case, and the 6 or 7 reddish-brown iris-nodules have disappeared under tuberculin treatment, although the cornea is still hazy. Mixed antisyphilitic treatment had had no effect. Dr. Bulson has under observation a corneal ulcer which he thinks was induced by tuberculin used for the diagnosis of a tubercular laryngitis. He is, however, a believer in the use of large diagnostic doses when small doses give no results.

A CASE OF CYSTICERCUS OF THE ANTERIOR CHAMBER.

Dr. R. Rembe (by invitation).—E. B., aged 7, presented a translucent, spherical tumor lying on the inferomesial surface of the right iris between axes 255° and 15°, measuring about 3 mm. across, and almost completely filling out this quadrant of the chamber. Distinct motion was observed by Dr. Rembe in the long axis of the mass before atropin was used to combat the slight iritis. The mass was removed by a forceps through a corneal incision. Additional circumstantial evidence that the tumor was a cysticercus is furnished by facts that (1) the boy lives in a small colony of about 900 Westphalian Germans near Chicago who eat quantities of uncooked pork in the shape of Westphalian sausage; (2) the local physician has treated 20 cases of tapeworm among these people within the year; (3) the community subsists almost entirely on vegetable or "truck" gardening, and all human fecal matter is used for fertilizer, and (4) the boy states that he often pulls up radishes and other vegetables by the roots, eating them after barely wiping off the dirt with his hands.

FURTHER REPORT ON THE CASE OF IRIS TUBERCULOSIS AS DIAGNOSED AND TREATED BY KOCH'S TUBERCULIN.

Drs. W. E. Gamble and E. V. L. Brown.—Quiescence and unimpaired function for 1¾ years have followed the six months' treatment which had resulted in the complete disappearance of two large tubercular iris-nodes; these had given repeated typical local reactions to tuberculin after failure of antisyphilitic treatment. The patient had gained 16 pounds.

TUBERCULOSIS OF THE CORNEA.

Dr. W. H. Wilder.—Case 1.—Miss A. A deep central keratitis of the left eye responded promptly to ordinary treatment. Six months later the lower part of the right cornea was attacked by a similar process, and the keratitis soon complicated by the development of 5 or 6 small nodes in the adjacent iris. The disease progressed during the succeeding three weeks despite doses of KI increased to 50 gr. t. i. d.; 5 mg. of the old tuberculin gave a general reaction, though no certain local reaction could be identified because of the very marked ciliary injection already present; however, the quiet fellow-eye gave a local reaction and tuberculin keratitis was diagnosed. Three months' use of the old tuberculin, beginning with a dose of 0.018 mg. and gradually increasing to 18 mg., resulted in a perfectly cleared cornea and 20/20 vision.

Case 2.—C. Y., aged 17. An infiltration of the middle layers of the cornea bordered by striæ radiating between the adjacent lamellæ had extended from the lateral quadrant to the central portion with restoration of an epithelial defect. A diagnostic dose of 5 mg. of the old tuberculin gave a general but no local reaction. New tuberculin was then used therapeutically for 7 months, beginning with 0.0018 mg. and increasing to 128 mg., with the result that good vision was restored, though considerable opacity of the cornea remained.

Dr. Wilder exhibited two further cases, one of probable uveitis, hyalitis and cataract, and one of long-standing "serous" iritis, both of which had given the general and local reaction. Dr. Wilder believes there is ample justification for doubt that general febrile and local reaction mean tuberculosis of the part.

TUBERCULIN INJECTIONS IN A CASE OF RETINITIS, PROBABLY DUE TO CEREBELLAR TUMOR.

Dr. H. B. Young, Burlington, Iowa.—A child of 10 developed an almost typical albuminuric retinitis during the course of the profound disturbance; the latter greatly improved under 4 months' treatment with 1 mg. injections of the old tuberculin.

Dr. W. A. Evans (by invitation).—From his extended experience Dr. Evans is firmly convinced of the reliability, safety and absolute necessity for the diagnostic use of tuberculin. He employs one 5 or 10 mg. dose of old tuberculin after a week or so of careful study of the pulse rate and temperature 4 times a day; he gives the injection late at night, that the period of greatest local and general reaction will occur during the following daytime.

E. V. L. Brown, *Secretary.*

Visual Errors and Automobile Accidents.—It has long been the custom to subject locomotive engineers to certain visual tests, especially tests for color perception, in order to safeguard the interests of the public. It is a question whether chauffeurs ought not also to be examined with regard to their visual acuity. Even now, seldom a week passes without some automobile accident being recorded in the daily press, and without doubt many of the minor accidents are never reported at all. The number of automobiles in use is constantly increasing, and as this form of carriage becomes more available for commercial purposes this increase will become more and more rapid. Clements points out that the chauffeur must be an accurate judge of pace and distance, and that this necessitates normal visual acuity. He calls attention to a series of motorists who consulted him regarding their vision after having undergone a number of minor mishaps, most of which, but for lucky chances, might have been much more serious. In all the patients Clements found errors of refraction, generally in the form of hypermetropia. In all instances, too, the danger of accidents of a certain class disappeared under correction of the error of refraction. In most of the instances referred to the accidents occurred about dusk and at turns in the road, the chauffeur miscalculating the distance and running into a ditch or bank. Clements calls attention to the fact that the convex goggles worn by autoists are practically weak hyperopic lenses, and that they may just turn the balance in favor of spasm of accommodation.—*Journal of the American Medical Association.*

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

Dr. Arthur Bruckner has taken up the practice of ophthalmology in Wurzburg.

Lord Iveagh has donated $5,000.00 to the ophthalmic department of the London Hospital.

The Stetson Hospital of Philadelphia reports treatment of 1,794 eye cases during the past fiscal year.

Dr. Vard H. Hulen has been appointed ophthalmic surgeon to St. Joseph's Infirmary, Houston, Texas.

Privat-Dozent Dr. Edward Hummestein, of Bonn, has been given the title of professor of ophthalmology.

The Medical Club of Philadelphia recently elected officers for 1907. Dr. L. Webster Fox was elected president.

Dr. Wendell Reber of Philadelphia was recently elected vice-president of the Philadelphia County Medical Society.

Eugene A. Smith of Buffalo is now lieutenant-colonel and surgeon to the fourth brigade of the National Guard, New York.

J. C. Halliday has been appointed assistant ophthalmic surgeon to the Royal Prince Alfred Hospital, Sydney, New South Wales.

Prof. Emil Venneman died suddenly Nov. 13, 1906, at his home in Loewen, Germany, where he held the chair of ophthalmology.

Dr. P. W. Kirkpatrick of Alamagordo, New Mexico, has been appointed institute physician to the New Mexico Institute for the Blind.

Lieut.-Col. George Sterling Ryerson, one of the leading ophthalmologists of Toronto, has been transferred to the reserve of officers.

Dr. William H. Dingee, well known as an ophthalmologist in Philadelphia, died at his home in that city on December 30, aged 32 years.

The Emergency Hospital at Easton, Md., was opened January 16. Dr. Hughlett Hardcastle is in charge of the eye, ear and throat department.

Dr. John V. Shoemaker of Philadelphia, Pa., was recently given a reception by the Mecklenburg County Medical Society at Chase City, Va.

Dr. Maximilian Salzman, for many years privatdozent in Professor Fuch's clinic in Vienna, has been given the title of professor of ophthalmology.

Mr. John Tweedy, late President of the Royal College of Surgeons of England and of the Ophthalmological Society, was knighted during November, 1906.

The publisher of the *Klinische Monatsblatter,* Alfred Enke, has been given the honorary degree of Doctor of Medicine for his efforts in support of scientific medicine.

The new Touro Infirmary was opened in New Orleans Jan. 1, 1907. The department of eye, ear, nose and throat is in charge of Drs. Paul L. Reiss and M. Feingold.

Dr. Fleming Carrow, of Detroit, who has been professor of ophthalmology for many years at the University of Michigan, is a candidate for the regency of the University.

Dr. W. R. Fringer, of Rockford, Ill., is the chairman of the committee on entertainment for the ladies at the annual meeting of the Illinois Medical Society at Rockford May 22.

Dr. W. G. Tucker of Chicago was married recently to Miss H. A. Pickett. Dr. Tucker has been studying ophthalmology in Chicago and intends to practice in London, England.

The students of the Royal London Ophthalmic (Moorfields) Hospital dined together at the Trocadero Restaurant, London, on Jan. 30, 1907. Mr. Jonathan Hutchinson presided.

The board of governors of the Knoxville (Tenn.) General Hospital re-elected Drs. John H. Kincaid and Achilles E. Foster to the staff in the department of eye, ear nose and throat.

The Ophthalmological Society of the United Kingdom, at a special meeting, voted, with an overwhelming majority, to remain out of the proposed union of London medical societies.

Dr. Theo. S. Blakesley of Kansas City, Mo., has been appointed to the staff of the New Swedish Hospital in Kansas City. He is in charge of the department of eye, ear, nose and throat.

Dr. L. Mattheissen, professor of mathematics and physics in the University of Rostock, died recently at the age of 76 years. He was the author of many valuable treatises upon physiologic optics.

Dr. Thomas Reid of Glasgow, Scotland, was given a dinner recently by his former house-surgeons upon the occasion of his professional jubilee. He received a handsome silver bowl as a remembrance.

Dr. D. M. Griffith of Owensboro, Ky., has been elected president of the Kentucky State Medical Association. This is the first instance in which an ophthalmologist has been elected president of this association.

Dr. Samuel D. Risley of Philadelphia was married, January 16, to Miss J. Louise Robinson, daughter of Dr. Roland G. Curtin of Philadelphia. They will be at home after February 1 at "The Belgravia," Philadelphia.

Dr. G. S. Hogue, who has been assisting Dr. H. V. Würdemann of Milwaukee, Wis., for the past two years, has gone to Europe for postgraduate work. He expects to visit all of the well-known clinics, but will spend most of his time in Vienna.

Mr. T. Beattie Campbell, who was for twenty years the secretary of the Royal Westminster Ophthalmic Hospital, London, died Nov. 28, 1906. He had been an invalid for two years. Mr. Campbell was a nephew of the poet, Thomas Campbell.

DRS. H. YAMAGUCHI and M. MAYEDA of Japan received the title of Igakuhakushi on the 1st of October last. This title means honored Doctor or Professor of Medicine. Thus far it has been conferred 134 times—ten times upon ophthalmologists.

IN AN article in the *Pacific Medical Journal* on "Pagan Medical Science of the Japanese," Dr. Albert S. Ashmead, formerly foreign medical director of the Tokio Hospital, Japan, refers to the still prevalent use of natural pearls, whole or powdered, as eye washes.

MEDICAL EXAMINATION OF SCHOOL CHILDREN.—At a recent meeting the Michigan State Board of Health adopted a resolution passed by the General Conference of Health Officers in June, 1905, approving the examination of the eyes and ears of children in the public schools.

THE College of Physicians and Surgeons of Philadelphia has elected the following ophthalmologists to its staff of officers and committees: Vice-president, Dr. George E. deSchweinitz; committee of publication, Dr. William Zentmayer; library committee, Dr. Charles A. Oliver.

IN Dusseldorf recently a committee, with the president of the province as chairman, voted to erect a monument to Professor Mooren, at one time an honored citizen of that city and a renowned ophthalmologist. Contributions may be sent to the Bergische-Markische Bank, Dusseldorf.

AN EPIDEMIC of ophthalmia occurred recently among the scholars of an elementary school in Aberdeen, Scotland. It was due to the stupidity and stubbornness of the educational authorities, who would not entertain any plans of prevention, but required the children to attend school regularly.

THE annual report of the South Baltimore Eye, Ear, Nose and Throat Hospital states that the number of patients treated was 1,878, of whom 1,797 were white and 81 colored. There were 7,370 visits to the dispensary. Five hundred operations were performed. The number of house patients was 86.

FRIENDS of Dr. E. Oliver Belt, who was recently killed in a railroad accident near Washington, D. C., have decided to provide a memorial for him. This will probably take the form of a free ward or bed in the Episcopal Eye, Ear, Nose and Throat Hospital of Washington, D. C., which he founded.

ITALIAN CONGRESS IN AID OF THE BLIND.—A national "congress of typhology" was recently held at Rome to discuss measures in relation to the blind. There was a large attendance, including many members from Germany, France and England, and a number of important resolutions were adopted.

TRACHOMA has recently been found in Mexico, according to Consul-General Gottschalk at the City of Mexico, and it is believed to have been imported by immigrants en route to the United States. At Salina Cruz, the Pacific terminal of the Tehuantepec Railroad, from 500 to 1,000 Asiatic coolies land monthly.

MR. T. HARRISON BUTLER has been appointed ophthalmic surgeon to the Coventry and Warwickshire Hospital, England. Dr. Butler, who was formerly a Radcliffe Traveling Fellow of Oxford University, recently resigned his post of assistant surgeon to the British Ophthalmic Hospital, Jerusalem, Palestine.

HERMAN COHN'S BEQUESTS FOR PRIZES IN OPHTHALMOLOGY.—The universities at Heidelberg, Berlin and Tubingen have each received 10,000 marks ($2,500) from the estate of the late world-renowned ophthalmologist, Herman Cohn of Breslau. The income from each endowment is to be awarded as a prize for research in ophthalmology.

A NEWSPAPER item dated Waukegan, January 24, states that Louis Kilbourn, a Zion City bookkeeper, formerly of Racine, was adjudged insane in county court yesterday and committed to the Elgin asylum. It was brought out that failing eyesight had worried him greatly, Zion rules not allowing him to wear glasses, without which he could not work.

G. K. CHESTERTON, in the *Illustrated London News,* thus denounces the monocle: "A single eyeglass is a thing in its nature altogether monstrous and devilish. The man who can put a glittering decoration in one eye and not in the other is blaspheming the balance and decency of the human form. He is capable of wearing a trouser on one leg or his mustache on one side of his face."

DISMISSAL OF DR. HOLMES.—The medical profession of Cincinnati, as well as the laity, are indignant over the dismissal of Dr. C. R. Holmes, who was serving in an advisory capacity to the board of public service in regard to the building of the new city hospital. Dr. Holmes has devoted a great deal of time, money and ability to the work, and is now said to be dismissed without so much as thanks.

TRACHOMA IN BROOKLYN.—Supt. Robert W. Bassett of the Brooklyn Eye and Ear Hospital says that fully 50 per cent. of the school children of Brooklyn are afflicted with eye troubles, and that about one-third of that number have trachoma. He is of the opinion that in one-half of these cases of eye trouble the disease is due to personal untidiness, improper food, bad air and poor hygienic surroundings.

AN ANNOUNCEMENT appeared in this department recently regarding the appointment of Prof. Dr. William Uhthoff, of Breslau, to succeed Professor Saemisch at Bonn. The *Wochenschrift für Therapie und Hygiene des Auges* is responsible for this news, but it now appears to have been merely a rumor. Dr. Horwitz, instructor in ophthalmology in Northwestern University, writing from Königsberg, states that Prof. Hermann Kuhnt signed a contract January 21 to take Professor Saemisch's place and that he leaves Königsberg almost immediately.

THE annual dinner of the Chicago Ophthalmological Society was held at the Chicago Athletic Association Building on the regular meeting night, Tuesday, January 8. The following officers were elected: President, Dr. F. C. Hotz; vice-president, Dr. J. B. Loring; secretary-treasurer, Dr. E. V. L. Brown; councilor to the Chicago Medical Society, Dr. W. H. Wilder; alternate councilor, Dr. Charles H. Beard. A number of visitors and out-of-town members were present, among them Dr. Calvin R. Ellwood of Menominee, Mich., and Dr. Young of Burlington, Iowa.

EYE, EAR, NOSE AND THROAT HOSPITAL.—On the recommendation of Dr. Arthur W. DeRoaldes, surgeon-in-chief of the Eye, Ear, Nose and Throat Hospital, New Orleans, the following medical staff has been appointed: Drs. Ernest A. Robin, Timothy A. Duggan and Victor C. Smith, eye department; Drs. Homer Dupuy, A. Benjamin Gaudet and Lieven DePoorter, ear, nose and throat department; Dr. E. S. Keits, resident surgeon; Dr. Isadore Dyer, consulting dermatologist; and Drs. Henry E. Menage and Ralph Hopkins, assistant consulting dermatologists.

Dr. E. Oliver Belt, of Washington, D. C., formerly a collaborator of this journal, was killed recently in a wreck on the Baltimore & Ohio Railroad, near that city. Dr. Belt was attending ophthalmologist to Freedman's Hospital, the Episcopal Eye, Ear and Throat Hospital and surgeon to the Baltimore & Ohio Railroad at Washington. In Frederick, Md., he was a member of the staff of the Emergency Hospital and of the Frederick City Hospital. His teaching work was carried on in Howard University, where he held the chair of ophthalmology and otology and was director of the clinics.

Eyesight of Engineers.—A recent order of the Chicago, Burlington and Quincy Railroad requires locomotive engineers on fast passenger trains to have such acuteness of vision as would enable them to see distinctly distant signals without the use of glasses. Regarding this, Second Vice-President Willard says, as quoted in *The Railway World:*

"A train running 60 miles an hour passes over more than 80 feet of distance in one second; at 70 miles an hour over more than 100 feet per second, and should it happen, as it doubtless might, that an engineer in charge of such a train running at such a speed was required to remove his spectacles to wipe the steam or mist from them, or should they become broken or fall off, and he be required to take time to get another pair to put on, for each second of time he was so occupied his train would be running at a high speed and it might pass signals or obstructions which the failure on his part to notice might be fatal; and because of this particular fact the company felt impelled, in the interest of safety only, to take the position it did take.

"The Burlington Co. has in its employ over 1,600 engineers. Of this number approximately 340 are in charge of passenger trains. Probably not more than 40 of the passenger engineers would be affected by this order, and, as a matter of fact, only two men were actually changed, and in each case the test demonstrated clearly that it would be better and safer for them and for the public to put them on runs of less severe requirements."—*The Railway Surgeon.*

Prevention of Blindness.—One of the most important appeals to the medical public, especially directed to ophthalmologists, is contained in the following letter, signed by Dr. F. Park Lewis, president, and Mr. O. H. Burritt, secretary, of the New York State Commission to Investigate the Condition of the Blind. The office of the commission is at

Batavia, N. Y., but information, advice and assistance may also be directed to Dr. Lewis' address, 454 Franklin street, Buffalo, N. Y. The committee points out that the loss of sight in the case of an individual is of economic importance to the state. The New York State Commission to Investigate the Condition of the Blind has been charged, therefore, by the Legislature with the duty of inquiring into the causes of blindness, and of recommending methods by which, as far as possible, unnecessary blindness may be prevented. To that end the Commission begs the assistance and advice of the medical profession. The secretary will gratefully receive and acknowledge any reprints, reports, pamphlets—or personal communications bearing on the causes and prevention of blindness. More especially information is sought on the following points:

Congenital Blindness: Its causes, the influence of heredity, consanguinity, etc. The reports of cases of blind parents producing blind children, character of blindness in such cases, etc.

Ophthalmia Neonatorum: How generally are preventive measures employed? Statistics bearing on the subject. What silver salt and in what strength should be recommended?

Trachoma and Other Infectious Eye Diseases: Statistics. How may early treatment be secured? Prevalence in schools, orphan asylums, etc. Preventive measures—medical inspection of schools.

Blindness from Accident, Injuries, Fireworks, Toy Pistols, Etc.: Statistics. Method of protection for eyes of workmen and others. Prohibition of dangerous explosives at celebrations.

Toxic Amblyopia: From methyl alcohol—other toxic agents. How may the public be protected?

Neglect on the Part of Patients Visiting Dispensaries: Patients suffering from conditions threatening vision absent themselves from clinics after being advised of the need of immediate treatment until too late. Method of reaching such.

Blindness Due to Neglect of Slight Ophthalmic Injuries: How can early treatment be more generally secured?

Blindness Due to Improper Hygiene and Sanitation in Corneal Troubles of Children: How can early treatment be secured?

Other Causes of Blindness: Suggestion as to prevention.

HELPING THE BLIND.—An enthusiastic audience was assembled in New York a few days ago to hear an address by Helen Keller. The appeal of a girl who was blind, deaf and dumb, and yet has been able to develop faculties supposedly denied her, was strong with the eloquence of sincere interest. Her plea for the blind was far more impressive than if she herself could see. But her suggestions carried weight also, because they were sensible and practical.

In the room adjoining the one where she spoke there was an exhibit of the work of the blind. A blind girl sat at a switchboard and manipulated the plugs as needed. Blind girls were writing on machines. A blind man was working at toymaking. There were many things shown there as indications of what was possible for people so afflicted who are given a chance to work.

Miss Keller advocated a census of the blind to discover how many people there are who are so unfortunate, how old they are. what their circumstances are, when and under what conditions they lost their sight. This she counted fundamental, and mentioned the state of Massachusetts as a leader in such an effort.

The number of blind being ascertained, the next thing needed is to awaken cities and towns to the realization of duty toward them. Success or failure in life for the blind was said to depend largely upon the community in which they lived. Special training for usefulness is only part of public duty. There must be an opportunity. The educated blind boy and girl must have a market for their product. That market must be opened in a way that will save the self-respect of the unfortunate. No one is ever more willing to do for himself than the educated blind man, but, from the nature of the case, he must have help. That help does not have to be in the form of charity. If a chance is furnished there will be a ready response and a wholly independent or partially independent citizen will take the place of one who otherwise must live life dependent upon the kindness of others.

It is the argument which many leaders are trying to make effective in practical efforts to relieve the burden of the dependents. And the heaviest burden of the blind, as Miss Keller puts it, is not blindness, but idleness. There are many so-called shut-ins who would be glad to work if there were only a chance. There are many blind people whose eyesight might be restored. The movement in New York is part of a general plan to call attention to the possibilities of practical relief. It is a notable example of the steady growth of civilization which seeks constantly to alleviate the distress of the unfortunate by helping them develop to their full capacity every power. To give opportunity to those who are willing and anxious to do is far better than to give money for homes where they may be idle, and infinitely better than the old-time way of abandoning the unfortunate as useless members of society.—*Chicago Tribune.*

Bill to Regulate Practice of Optometry.—The following bill has been prepared by the Indiana Optometrical Society to regulate the practice of optometry, according to the *Jeweler's Circular Weekly:*

Section 1 provides that the practice of optometry be defined as follows: The employment of skilled means to determine the accommodative and refractive conditions of the eye, its requirements, the scope of its functions in general, and the act of adapting lenses for the relief of eyestrain and the betterment of vision.

According to Section 2 nothing in the act shall be considered to apply to physicians and surgeons authorized to practice under the laws of the state of Indiana, nor to resident merchants so long as they sell spectacles as any other piece of merchandise without representation of qualification on the part of the seller.

Section 3 provides that it shall be unlawful for any person to practice optometry in the state unless he shall first obtain a certificate of registration from the board, created by the act, and file the same with the clerk of the Circuit Court of the county in which he proposes to practice, and Section 4 creates a board which shall be known as the Indiana State Board of Registration and Examination in Optometry, whose duty it shall be to carry out the provisions of the act. The board shall consist of five members who shall have been resident opticians, engaged in the actual practice of optometry in the state for a period of five years prior to their appointment. The appointments shall be made, one by the governor, one by the Indiana State Board of Health, and three by the Indiana State Optical Society.

Section 6 provides that every person before beginning to practice optometry in the state shall pass an examination before the State Board of Examiners. Such examination shall be confined to such knowledge as is essential to the practice of optometry. A fee of $10 shall be required of each applicant examined and an additional fee of $15 shall be required of the successful ones before certificates are given them.

By Section 7 every person who is engaged in the practice of optometry at the time of the passage of the act shall, within 90 days thereafter, file affidavit in proof thereof with the board, which shall issue certificates to such practicing opticians in consideration of the payment of $5. In case of change of residence from one county to another, the holder of an optician's license may obtain a new license without charge.

It is provided that every person to whom a certificate of examination or registration is granted shall display the same in a conspicuous part of his office.; and that the members of the board may receive as compensation the sum of $5 for each day actually engaged in the duties of the office, such funds to be drawn from the revenues of the office. Mileage is also allowed the board members. Moneys received by the board in excess of $500 shall be paid annually into the general school fund.

Registered opticians shall pay an annual fee of $2 and the board shall refuse to grant a certificate to any person stigmatized by crime, immorality, habitual drunkenness, gross incompetency or contagious diseases, and may revoke licenses for like cause. For violations of the act a fine of not less than $10 or more than $100 shall be imposed.

A committee, of which C. M. Jenkins, Richmond, was made chairman, was appointed to place copies of the proposed law in the hands of each legislator and to push the bill through the General Assembly.

Officers of the society were re-elected as follows: President, J. H. Ellis, South Bend; first vice-president, H. E. Woodward, Indianapolis; second vice-president, E. C. Canada, Winchester; secretary, Margaret Erisman, Lafayette; treasurer, M. C. Kline, Crawfordsville, and chairman of the executive committee, William Edwards, Knightstown.

In order to close its files THE OPHTHALMIC RECORD will pay 50 cents for the October, 1902 number, and $1.00 for the June, 1903 number.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

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Original Articles.

SEVERE VERTIGO FROM EYESTRAIN.

L. S. Dixon, M.D.
BOSTON.

Case 1.—Miss C., aged 40, has been troubled many years with headaches, indigestion and signs of nervous exhaustion. Ten years ago was advised by oculist to wear glasses for close work only. + .25 sph. ⊂ + .75 cyl. ax. 75° R., + .25 sph. ⊂ + .75 cyl. ax. 125° L. Three years ago began to be greatly annoyed by vertigo and dizziness, especially after eating, on change of position or turning the head quickly. This condition has been steadily increasing in severity until now she has to move with great deliberation; it frequently takes her ten minutes or more to get out of bed; she dreads to go on the street alone, to eat anything, to be spoken to unexpectedly, or to turn the head or eyes quickly, for fear of precipitating an attack of nausea and vertigo lasting from ten minutes to half an hour.

Vision at visit was 28/20 O.U., and the same also with difficulty with + .50 sph. O.U. The ophthalmometer indicated no corneal astigmatism. Accommodation was normal.

Being a firm believer that latent hypermetropia is extremely common, and the chief cause, not only of many obscure nervous disturbances, but of all of our difficulties in refraction work, I sought to find traces of it. After about fifteen minutes of practice and urging, she was able partially to read 28/20 on a fresh card with + 1.25 sph. O.U. These glasses were ordered for constant wear, without regard for the indistinct vision they caused, and this because, if they were really + .25 too strong, it would have been impossible for her to have deciphered any letters of the twenty-foot line through them.

Ten days later she reported very decided relief, but was much annoyed by the poor distant vision, hardly 28/40. She was advised to persist. Two weeks later she reported immense relief in comfort, health and disposition. Vision 28/24 with the glasses. She has no dizziness, eats with pleasure, turns head quickly, and has only momentary reminders of her old troubles. She was ordered + 2 sph. O.U. for all close work to guard against the possibility of further latent H.

One month later she had had no return of symptoms and was steadily improving.

Some one was badly cheated by her eyes when induced to correct + .75 D. of astigmatism that was not there, and to neglect 1 D. of hypermetropia that was there.

Case 2.—Mr. S., aged 21. Patient, coming from waiting-room to office, reeled along the entryway, striking wall and stairs alternately; seized sides of doorway to steady himself, then lurched into large chair and seemed exhausted. After a minute or so he called for a basin on account of nausea, and said he was so dizzy he could not open his eyes. After a little rest, he said he had had attacks of vertigo and nausea for two years, increasing in intensity and frequency, until now he was timid about going alone anywhere. Health was good, no trouble from indigestion, though dizzy spells were rather apt to occur just after eating; not subject to headache or blurred vision; no known cause for attacks. Used to have for several years spells of blurred vision, with numbness of right arm, hand and tongue, but not since the vertigo began. Friends have been much worried about him; has been treated by several physicians without any real relief. Has had, and has now, some buzzing noise in ears; has been treated by aurist, without any permanent help. About a year ago saw an oculist, who prescribed glasses for constant use; these for a while seemed helpful.

He was unable to open his eyes, even after fifteen minutes' rest, without increase of nausea. Considering it an established rule that any one wearing glasses steadily, and still suffering from nervous reflexes, must be in need of more assistance to his ciliary muscles, I placed + .75 sph. O.U. in trial frame and put in front of his glasses and asked if he could open his eyes now. To his surprise he found he could, without increase of nausea, and said they made him feel steadier. It was, however, nearly an hour before he dared to leave the office, and no examination was made except to measure his glasses, which proved to be — .25 cyl. ax. 180 and — .50 cyl. ax. 180. Vision 28/30 with them. He was advised to get a pair of + 1 sph. glasses on his way home and wear them until he came in for further examination. Two days later he returned. Examination showed he needed R. + .50 sph. ◯ + .50 cyl. ax. 95°. L. + .50 sph. ◯ + .37 cyl. ax. 90°. Vision 28/30. He was given + .50 sph. O.U. to use in front for close work. Three weeks later he returned; had done full work at his studies, and had two slight dizzy spells, but none for the past ten days. He preferred to wear both pairs of glasses all the time, and had nearly 28/40 vision with them. This combination was ordered for constant use, and the + .50 sph. were still to be used for study. Seven weeks later he reported that he had no vertigo or nausea, did not notice glasses blurred much, if any; vision was 28/40 + with them. Still has the buzzing in ears, but otherwise feels perfectly well.

Here also latent H. was overlooked and caused very severe symptoms, and his astigmatism was corrected in the wrong way on account of it.

A NEW SCHEMATIC EYE.*

William A. Fisher, M.D.

Professor of Ophthalmology and President Chicago Eye, Ear, Nose and Throat College.

CHICAGO.

(Illustrated.)

In presenting a new schematic eye to this society one must necessarily use pictures familiar to all. It is not my purpose to instruct the members, but, through you, to bring before students and the profession a simple and easy way to acquire a practical working knowledge of the ophthalmoscope, and with the aid of this schematic eye and chart enable students at home to obtain an accurate and fairly comprehensive knowledge of intraocular conditions at a trivial cost; a knowledge which brings not only satisfaction to the user, but safety to his patients. Somehow the idea has gone abroad that the use of the ophthalmoscope is very difficult to learn. To you who use it so dextrously such an idea seems absurd. Yet how many physicians do we meet who will, without the slightest hesitancy, avow their ignorance of the ophthalmoscope who would be ashamed were they not competent to do auscultation and percussion. Their ears have been trained, but not their eyes. They have mastered the more difficult task, but stand utterly helpless before that which is the easier. Contact, for the past fifteen years, with many men desirous of widening their fields of usefulness, long ago forced upon my attention the almost hopeless despair with which so many regard the ophthalmoscope.

The reason for this concept is not hard to trace and is to be found:

1. In the failure of our undergraduate schools to teach the use of the ophthalmoscope. This is evidenced by the great number of students turned out with no idea of how to use it.

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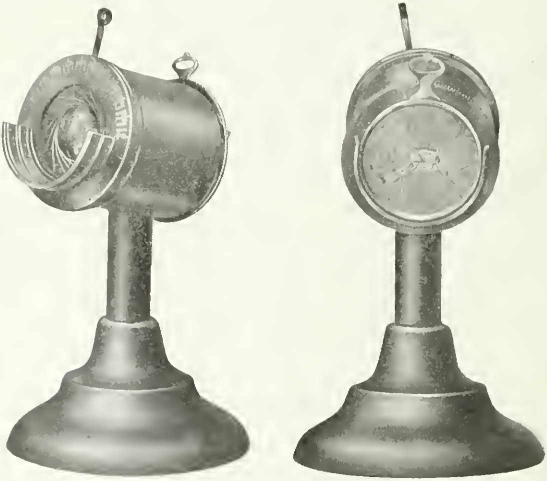
* Read before the Chicago Ophthalmological Society, February, 1907.

2. Faulty conditions under which those labor who, without previous instruction, try to use the ophthalmoscope. A living model should never be given a beginner. Any one undertaking a thing for the first time naturally feels a little anxious and is easily frustrated. A living model with full mydriasis and perfectly trained—a thing, so far as I know, never attempted anywhere—would be a difficult task for a beginner, but to take a subject without training and an undilated pupil it is simply an impossible proposition. To an expert a patient who is constantly changing the axis of the globe is annoying, but he knows where the trouble is and how to correct it, but not so with the beginner; he is confused.



With a schematic eye it is different; it stays exactly where you put it, there is no rotation upon its axis, and with the iris diaphragm here attached you can have a pupil of any size from one of thirty millimeters to a pinhole. This schematic eye, the outgrowth of a necessity felt in our school, does not differ very greatly from others of its kind, the chief difference being the iris diaphragm, the number of fundi and the explanatory chart. Here we have twenty-four fundi as against one which is usually sold. Each picture is on a slide; each represents a different condition and is easily changed. When one becomes proficient with a large pupil he can gradually reduce its diameter until he gets to a pinhole; by this time he has learned to regulate his light and use the ophthalmoscope. We have two normal, two congenital and twenty pathological conditions of the fundus which can be examined and compared one with another and the chart. A few hours spent upon these fundi, having previously read the directions found in any text-book upon the use of the ophthalmoscope, he should be ready for his first lesson upon the human eye. He can take a patient or a member of his family, drop in a 4 per cent. solution of cocain, and after waiting 15 minutes in order to give the pupil time to dilate he should be able to see the fundus, provided the subject is not one of high myopia. A little practice upon living models, with the impression of these pictures on his mind, should enable him to make a fairly accurate diagnosis in gross pathological conditions.

Has there not been and is there not being done an injustice to our medical students, that they are permitted to pass through our schools without being taught the use of the ophthalmoscope, the only instrument which can reveal to us an accurate knowledge of fundus conditions? As an evidence of their desire to know, the number of men seeking such knowledge in our postgraduate schools is a sufficient answer. Yet here is an instrument more easily manipulated than a microscope, the cost of which is trivial, and yet a working knowledge of which is unknown to so many honest seekers after information. I hope you who are connected with the undergraduate schools will see this matter as it presents itself to me coming daily in contact with medical graduates seeking information, this part which should have been learned in undergraduate schools.

REPORT OF A CASE OF SELF-ENUCLEATION OF THE EYEBALL.

GUY L. NOYES, M.D.
COLUMBIA, MO.

Self-enucleation of the eyeball is so seldom heard of that the recording of another case of complete removal of one eye by means of the fingers alone is seemingly justified.

The patient, whose history is herewith presented, I saw by courtesy of Dr. A. S. Rowley, assistant superintendent of the Northern Michigan Asylum for the Insane. I am indebted to Dr. Rowley, also, for the various extracts from the patient's history that follow:

Mrs. C. S., aged 65 years, was admitted to the Northern Michigan Asylum at 7:30 p. m. July 23, 1906. She talked to the nurses in a rational manner; had a light supper and was put to bed. She slept well until 1 a. m., when she talked with the night nurse and said she had rested. She dropped asleep again and slept until 4 a. m. At 4:40 she was awake and wanted to get up and dress. She said she had always been in the habit of rising early. She seemed rational and quiet. At 5:30 a. m. was found with face and hands covered with blood. Had removed the right eye and badly injured the left. The right eye was found under the bed, where she had thrown it. She said she had removed it with her hands, and later said a voice had told her to take it out. The attending physician was shortly present, and in response to further inquiry patient said that she did it in accordance with the Scriptures: "If thine eye offend thee pluck it out." Patient described, in detail, how she had accomplished this horrible deed. She had forced her finger back into the socket and deliberately pulled the eye out. About 3 cm. of the optic nerve was attached to the right eye. The eyeball collapsed. The left eye was much injected, but was in the socket; at first it seemed that the patient had some sight left, but in a few days it was apparent that vision had entirely disappeared.

Following this sad event, patient often appeared remorseful and said that she was sorry that she had done it, although she still retained her religious notions and talked of being a Divine healer. On account of her blindness and old age, it was thought that she could be cared for at home safely, and she was sent to her home on August 28. Since that time nothing has been heard of her condition. It would seem that the act of removing the eye was prompted by the presence of an irrisistible impulse, its origin being hallucinations of hearing.

When seen by the writer, five weeks after the enucleation had been done, the appearance of the socket on the right side was not unusual except for the presence of a small granulation button at the site of the conjunctival aperture, such as is infrequently seen following the ordinary procedure of enucleation.

The left eye showed a rather marked zone of conjunctival congestion, situated well up toward the fornix; otherwise the external appearance was normal.

I was unable to make an ophthalmoscopic examination. There was total blindness in this eye.

The act of auto-enucleation is probably less difficult of accomplishment than might be thought; for Mackinlay,[1] in reporting his case, mentions also the case of a butcher, aged about 50, suffering from insanity, who, while taking exercise, drew the attention of his attendant by saying, "Watch me gouge out my eye;" and quick as thought, with his thumb, he did so, throwing his eye against the wall opposite. Had he not been forcibly prevented, he would have proceeded in the same manner with his other eye. This patient made a good recovery, as did Mackinlay's patient, where the self-enucleation of one eye was accomplished by means of a meat hook.

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[1] Transactions of Ophth. Society of United Kingdom, vol. vii.

McHardy[2] has recorded the case of an insane person who performed auto-enucleation of one eye with his thumb and died of suppurative meningitis within four days.

Fulton[3] saw a man who, while in a much depressed mental state following a prolonged debauch, had almost completed double self-enucleation. By thrusting his thumbs backward toward the apex of the orbit and shoving the eyes forward, this man had succeeded so well in his efforts that the eyeballs were held in the head by conjunctiva only.

So far as I can determine, the case here reported for the first time is the fourth to be recorded of complete self-enucleation. Fulton's case of double self-enucleation was nearly complete. Death followed in one of the cases. Unsoundness of mind was plainly in evidence in all the cases. It is of some interest to note that in three of the cases the impulse to commit this terrible act of mutilation arose out of an insane application of the Scriptural injunction, "And if thine eye offend thee, pluck it out and cast it from thee."

Fulton suggests that his case indicates the care that should be taken to prevent such happenings among those in depressed mental states. The suggestion is proper, of course, but with self-enucleation as easy of accomplishment as it seems to be and imperative impulses to self-mutilation as common as they are, the very terrible act of self-enucleation will be repeated, I fear, in spite of the utmost vigilance on the part of those in care of the insane.

FILTRATION OF THE EYE AND THE PATHOGENESIS OF GLAUCOMA.

SECOND NOTE REGARDING THE CRITICISMS OF PROF. TH. LEBER.*

M. Uribe Troncoso, M.D.

MEXICO.

In the controversy between Uribe y Troncoso and Professor Leber, the former publishes a second note regarding the criticisms which Leber has made of his ideas and experiments in the filtration of the eye and the pathogenesis of glaucoma in his article of April, 1906, in the *Annales d'Oculistique.* In this article Professor Leber claims for himself and his assistant, Dr. Pilzecker, the merit of having shown that there are considerable differences between the quantities of liquid injected by the manometer of filtration into the anterior chamber and those which come out of the eye through the channel of Schlemm. He admits, however, that M. Uribe pointed them out first. Leber attacks the ideas advanced by him concerning the inequality of pressure on the vitreous body and the anterior chamber during the experiments with the manometer, about the proportion of real infiltration, and about whether the eye should be considered as really divided by the irido-crystallinian diaphragm into two cavities the pressures of which are continually struggling to maintain equilibrium.

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[2] Transactions of Ophth. Society of United Kingdom, vol. vi.

[3] American Journal of Ophthalmology, vol. iv.

* Annales de Oftalmologia, September, 1906.

Uribe y Troncoso declares, about the first point, that the arguments of Professor Leber are sophistical, for, in order to demonstrate that certain results obtained by Uribe have no value, he criticises experiments entirely different from those on which the conclusions are based.

About his experiments being correctly made, Dr. Uribe insists that they were, for, although the apparatus was badly graduated for volumes, he did not make use of these, but of weights, and the results of the two methods which he employed to find out the quantity of liquids retained in the eye, although seemingly contradictory owing to excessive evaporation in Mexico are not so in reality, and Professor Leber has personally proved this when he says that by putting the eyes under a layer of petroleum he obtained exactly the same results as Uribe y Troncoso.

Contrary to what Professor Leber attributes to him, the author does not believe there is any inequality of pressures between the vitreous body and the anterior chamber in the normal living eye, but in those submitted to experiments and in pathological ones.

As regards the objections of Professor Leber to the pathogenetic theory of glaucoma formulated by Uribe y Troncoso, namely, that Professor Leber has found a large quantity of albumin in eyes with internal inflammations and diminished tension, as in panophthalmitis, serous and plastic irido-cyclitis, in advanced cases of separation of the retina, and in general in eyes affected with atrophy, Uribe y Troncoso asserts that in inflammations we must distinguish two periods: one, hypertonic, very marked especially in serous iritis, and another hypotonic. The first is produced by the difficulty of filtration of the aqueous humor laden with albumin; the second supervenes, although the latter exists in the interior of the globe in abundance, because the interstitial exudates and the inflammatory neomembranes, on organizing themselves, produce a sclerosis of the ciliary body and consequently a diminution in the secretion of the aqueous humor and the softening and atrophy of the eye by stagnation of all the nutritive currents. In fact, to have hypertension it is necessary that there should be an excess of liquids seeking an outlet through the filtration channels, driven by the hydrostatic pressure of the eye. If the latter decreases through want of secretion of the aqueous humor, the intraocular liquids will stagnate and remain almost solely subject to osmotic forces, placing themselves in isotonic equilibrium with the blood liquid.

Besides, the end of chronic inflammatory glaucoma is also the atrophy of the globe, which is produced, notwithstanding the persistence of albuminous matter, by atrophy of the ciliary body, to which are added vascular changes in the retina and chorioid which as they progress reduce still further the arrival of blood and consequently the production of ocular liquids.

THE ACCURATE DIAGNOSIS OF CONJUNCTIVITIS.

JOSEPH CLOTHIER, M.D.
PHILADELPHIA.

Successful treatment of disease of any sort depends upon the accuracy of our diagnosis and nowhere is the necessity for such accuracy more evident than in the various inflammatory conditions of the conjunctiva; for, while conjunctivitis is often of apparently little importance, every observer who has seen many of these cases knows that there have been times when he has met with most stubborn resistance in their treatment and that an infection starting as a very mild type may develop to such an extent as to involve other structures of the eye and threaten the integrity of the eyeball itself.

Up to the present time the diagnosis of conjunctivitis has usually been based upon clinical data alone and the resulting treatment has of necessity been largely empirical. It must be admitted that many cases of conjunctivitis can be diagnosed from clinical signs alone and the most beautiful results obtained from the treatment based on these findings. But even in these successful cases our diagnosis lacks that accuracy so desirable in all disease and it is only to be obtained by a careful bacteriological examination of the ocular secretions, or, in the event of this proving negative, by making a culture of the same.

Brown Pusey goes so far as to say that the diagnosis and prognosis of all infections of the eyeball depend upon the bacteriological findings and that the clinical diagnosis is entirely unreliable.

If this statement seems rather too strong, and it may not be convenient at all times to examine the secretion of a case of conjunctivitis, it is at least the duty of the physician in attendance upon such cases, when he finds no change for the better (after treating the patient for a few days), to make a smear of the conjunctival secretions and examine them; or if he has not the time or facilities for such examination to refer the case to some one who will make the examination for him—a duty he owes not only to his patient, but himself as well.

The bacteria most commonly concerned in the infection of the conjunctiva are the Koch-Weeks bacillus, Morax-Axenfeld diplobacillus, pneumococcus, streptococcus, gonococcus and diphtheria bacillus.

It has not as yet been possible to classify the various types of conjunctivitis according to the causative agent, for none of the bacteria found in the ocular secretion produce in the eye a symptom-complex characteristic of that particular organism; and it has, furthermore, been shown that the same form of conjunctivitis can be produced by various organisms. An examination of the secretions of forms of conjunctival inflammation clinically identical will frequently show them to be morphologically very different. As an instance, Francisco, in an examination of 40 cases of ophthalmia neonatorum, found the gonococcus in 30 cases, no gonococcus in 10 cases, and in several of the latter the Koch-Weeks infection. The average duration of the gonococcic forms was 53 days; of the non-gonococcic forms, 36 days. Here the bacteriologic examination, aside from showing at once the exact nature of the infectious agent in each case, made it possible not only to give a better prognosis in 25 per cent. of these cases, but permitted of such modification of treatment in this latter group as to get the best possible results and shorten the course of the disease.

While speaking of purulent conjunctivitis, it might be well to add that, although the strong silver solutions are indicated in the gonorrheal variety, they increase the danger of corneal suppuration in the non-gonococcic forms, and if employed in this type must be used cautiously.

A brief summary of a few interesting and recently reported cases may serve to more strongly emphasize the point in mind.

Case 1.—Weeks, New York, reports "seeing a case diagnosed as diphtheritic conjunctivitis which afterward, on examination of the conjunctival secretion, proved to be gonorrheal conjunctivitis."

In this case a mistake in diagnosis meant much to the patient, and the wrong treatment would undoubtedly have been employed had the clinical signs alone been depended upon.

Case 2.—Brown Pusey refers to a case diagnosed as gonorrheal conjunctivitis which microscopic examination showed to be a diplobacillus infection. The mode of treatment in these two infections is so diametrically different that the need for accuracy in diagnosis is still further emphasized.

Case 3.—The same author refers to a case of chronic conjunctivitis with slight redness of tarsal conjunctiva and slight discharge in the morning. Five per cent. protargol was used for two weeks, and later argyrol for some time, with no improvement. Thinking the condition might possibly be due to eyestrain, glasses were ordered to correct slight refractive error, with still no improvement. Smears of the conjunctival secretions showed no diplobacillus, but on making a culture they grew abundantly. The exact cause of the inflammation now being known, zinc was used and the case quickly cleared up.

Had this examination been made in the beginning much valuable time would have been saved to the patient.

Case 4.—I am indebted to Dr. Wendell Reber for the privilege of reporting the following interesting and instructive case:

C. F. E., attorney, aged 35. Has worn present correction 16 years. He has had no special discomfort with the eyes until recently, when they have tired easily in the evening and the lids are sometimes agglutinated in the morning. The patient is a well-nourished man, in excellent physical condition. Six weeks ago had a rather severe "head cold." Vision, R., 5/4; L., 5/4. He is wearing R. + .25 s. $\overset{\frown}{\smile}$ + 0.50 c. 90°. L. + .25 s. $\overset{\frown}{\smile}$ + 0.50 c. 75. With these he reads 0.50 D. type from 20 to 50 cm. There was slight hyperemia of palpebral conjunctiva. Muscle balance normal. Eyegrounds likewise. Under hyoscin his refraction was R. + 1.75 s. $\overset{\frown}{\smile}$ + 0.50 c. 90°. L. + 1.75 s. $\overset{\frown}{\smile}$ + 0.50 c. 75°. A suitable correction was ordered and he was told to report again if he had any trouble. Four weeks later he returned, saying his symptoms were much the same as they had been. Again the conjunctivæ were examined and the same conditions noted as before. A boric lotion was then ordered t. i. d., and a weak yellow oxid of mercury ointment at night. In two weeks the patient came back again, saying that his eyes were giving him more trouble than ever. The conjunctivæ of the bulb showed slight hyperemia now, and smears of the conjunctival secretions were made at this visit. On examination of these smears under the microscope by the author numerous

Morax-Axenfeld (diplobacillus) were found and the patient was then promptly put upon zinc chlorid solution, since which time the conjunctivæ have cleared up and his eyes have given him practically no trouble at all.

These few instances will tend to show how unreliable may be our clinical diagnosis of conjunctivitis and how necessary, at least in all doubtful cases, it is to know exactly with which form of infection we are dealing.

OCULAR ROTATIONS.

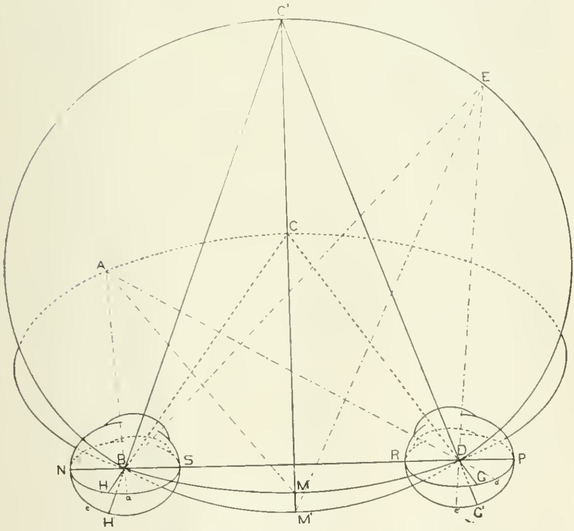
G. C. Savage, M.D.

NASHVILLE, TENN.

(Illustrated.)

The accompanying cut illustrates better than words what I have been teaching, for a long time, about ocular rotations. Let it be understood that the terms horopteric circle, the isogonal circle and the monoscopteric circle all mean the same thing; that is, a circle constructed through the point of fixation and through the center of rotation in each eye. In the cut this circle is C-B-D. Since there are many other circles just like this one, they should all be spoken of as isogonal circles or monoscopteric circles, each intersecting all the others in the line B-D, which is a chord common to all these circles. One of these circles should be distinguished by name from all the others, for the reason that its plane alone contains the visual axes and the two horizontal retinal meridians. This could not be better named than the primary isogonal or monoscopteric circle. The planes of all the other circles contain only secondary visual lines, two of which may extend from any point on the circle through the centers of rotation to two corresponding retinal points. The planes of these circles extended backward do not contain retinal meridians, but they cross, at different points, every meridian. These should be called secondary isogonal or monoscopteric circles. The primary circle is not a truer mathematical figure than are the secondary circles. The one is precisely like the other, and in ocular rotations the one displaces the other. In the figure, B-C-D is the primary isogonal circle, in the horizontal position, C being the point of fixation, B the center of retinal curvature in the left eye, and D the center of retinal curvature in the right eye. The plane of this circle extended backward to H in the left eye and to G in right eye contains the two visual axes H-B-C and G-D-C, and also contains the two horizontal retinal meridians N-H-S and R-G-P. If the point of view is to be changed from C to A on the same circle, the two eyes will be turned to the left through the arc A-C, so that the visual axis H-C shall take the place of the indirect visual line A-*a*, and the visual axis G-C shall take the place of the indirect visual line A-*a*′. It appears evident that in changing the point of view from C to A the visual axes and the two horizontal retinal meridians have remained in the unmoved plane, B-C-D.

In the figure the circle C′-D-B is a secondary isogonal circle, forming a definite angle with the primary circle C-D-B. The lines C′-B-H′ and C′-D-G′ are indirect visual lines. That the point C′ is in a vertical plane with C is shown by the fact that the line M-C, bisecting the angle B-C-D, is in a vertical plane with the line M′-C′, the line bisecting the angle B-C′-D. Therefore, H′ must be in a vertical plane with H and G′ must be in a vertical plane with G. G′ and H′ are, therefore, in the vertical retinal meridians of their respective eyes. In changing the point of view from C to C′ the extended plane of the circle C-B-D must be rotated on the chord B-D until it occupies the position of the secondary isogonal circle C′-D-B. In doing this the visual axes H-C and G-C are made to take the places of the indirect visual lines H′-C′ and G′-C′. In this rotation the visual axes and the two horizontal retinal meridians



have remained in the plane of the primary isogonal circle; nor in this rotation have either the visual axes or horizontal retinal meridians changed their positions in this plane. Since C′ is directly above C, the visual axis H-C has moved to C′ in the extended plane of the vertical meridian of the left eye, and the visual axis G-C has moved to C′ in the extended plane of the vertical meridian of the right eye. The visual axis moves from one point of view to another point of view in a plane common to these two points of view and the center of rotation. C′ is just as high above C, in degrees of arc, as H′ is below H, for the angle C-B-C′ is equal to the angle H-B-H′, since they are opposite angles, and each is measured by that arc of the vertical meridian between H and H′. By the same reasoning we find that the angle formed by the planes of the primary retinal curve N-H-S and the secondary retinal curve N-H′-S along the line N-B-S is the same as the angle formed by the planes of the primary isogonal circle C-B-D and the secondary isogonal circle C′-B-D, along the chord B-D, for they are opposite.

If the point of view is to be changed from C on the primary isogonal circle on E on the secondary isogonal circle, the plane of the primary circle would be rotated upward on its chord B-D until it reaches E, replacing the plane of the secondary circle C′-B-D, just as it did when the second point of view was C′, and in the new position would still contain the two visual axes and the two horizontal retinal meridians. But from the beginning to the end of this rising of the primary plane the visual axes and the horizontal retinal meridians would be shifting in it toward the right, and at the moment the plane reaches the point E the visual axes would be converged on it. The visual axis H-C in going from C to E has not only shifted its position in the primary isogonal plane, but has moved in a plane common to C, the primary point of view, E, the secondary point of view, and B, the center of rotation. Since a plane that includes the visual axis must cut the poles, it can be none other than a meridianal plane; hence E must lie in an oblique meridianal plane. Since E on the secondary isogonal circle is connected by a straight line, through the center of retinal curvature, with *e* on the secondary retinal curve N-H′-S, then *e* must be on that retinal meridian whose plane extended includes E. It is plain that *e* is just as far below and to the left of the macula H, in degrees of arc, as E is above and to the right of C, for the angle H-B-*e* is equal to the angle C-B-E, for they are opposite angles, and each is measured by the arc of the oblique meridian intervening between the point H of the macula and the point *e* on the secondary circle. In the oblique rotation from C to E the visual axis H-C simply takes the position of the indirect visual line E-*e*, connecting the point E with the image *e*, the latter now being on the macula. The horizontal retinal meridian has been made to take the place of the secondary retinal curve N-H′-S. The former has shifted in the plane of the primary isogonal circle as it rotated upward, but has not been tilted out of it.

Any number of points on the primary isogonal circle B-C-D will have their images on the primary retinal curve N-H-S; likewise any number of points on the secondary isogonal circle B-C′-D will have their images on the secondary retinal curve N-H′-S. When the primary isogonal circle takes the place of a secondary isogonal circle all the special points that were on the latter will be on the former; likewise when the primary retinal curve takes the place of a secondary retinal curve all the image points that were on the latter will be on the former; hence there is no tortioning, declination or cyclotropia of any retinal meridian under normal conditions.

Thus is demonstrated with mathematical precision the following law of binocular rest and motion: Whether in rest cr in motion, the superior and inferior recti muscles must keep the visual axes in the plane of the primary isogonal circle, the interni must converge them to some point of fixation on this circle, and the lateral recti (both the interni and the externi) must move the visual axes in this plane when the point of view is to be changed either to the right or left of the extended median plane of the head, all in the interest of binocular single vision; and the obliques must keep the two horizontal retinal meridians in this plane extended backward, in the interest of both binocular single vision and correct orientation.

What has been said about the secondary isogonal circle B-C′-D and its plane, and the secondary retinal curve N-H′-S, is equally true of all other secondary special circles and retinal curves, whether above or below the primary isogonal circle when in the horizontal position; and the latter, by being rotated on the common chord B-D, can be made to take the place of any one of these.

When one eye is in an orbit lower than that of its fellow-eye, the plane of the primary isogonal circle is inclined toward the side of the lower eye, and to the same extent the horizontal retinal meridians must be inclined by action of the superior oblique of the high eye and the inferior oblique of the low eye. All secondary isogonal circles are inclined to the same extent as is the primary circle, and so are all secondary retinal curves. In non-parallel oblique astigmatism, binocular single vision. at the expense of correct orientation, demands that the horizontal retinal meridians shall not lie in the plane of the primary, or any other, isogonal circle. In such uncorrected cases there must be either a plus or minus cyclotropia.

A CASE OF CHRONIC PSEUDO-MEMBRANOUS CONJUNCTIVITIS, WITH DEVELOPMENT OF OCULAR AND PHARYNGEAL DIPHTHERIA ON THE USE OF JEQUIRITY.

Herbert Harlan, A.M., M.D.
BALTIMORE, MD.

A. Stanford Morton, in the Transactions of the Ophthalmological Society of the United Kingdom, 1892-93, relates a case in which, after splitting a canaliculus and passing a probe for lacrimal abscess, there developed a membranous conjunctivitis of the lids, which ultimately attacked the globe, and the cornea sloughed. There also developed a growth which was removed with the membrane, and the base cauterized with various agents a number of times in 1886 and 1888. The membrane and granulation mass still persisted in May, 1893.

Guibert, in the *Archives d'Ophtalmologie,* 1893, p. 627, relates another case. This was that of a child of 7 whose mother stated that she had always had, since she was 3 months old, some membranes and pus in the left eye. At 2 years she had an attack of sore throat and the eye became worse. At 5 years another attack of sore throat and a new membranous conjunctivitis, but this time more grave. The cornea ulcerated and the eye emptied itself. Since then there had remained a suppurating, fleshy mass. In December, 1892, there was a third attack of sore throat, and the eye, which had been healthy up to this time, was attacked. At this time the case came under observation.

"Child excessively pale and waxy. Left eye, lids and globe covered with a false membrane. Right eye, a false membrane covered all the inner surface of the upper and the outer side of the lower lid. There was a small corneal ulcer. Membrane pulled off and the surface bled a little. Next morning membrane had reformed. Treatment: Ice constantly; instillations, seven and eight times a day, of lemon juice, of eserin, of pyoktanin, washings with solutions of boric acid and carbolic acid. Mitigated stick to the false membrane and next day it was worse than usual.

Some days later lactic acid gave the same result. After two months only a small piece of membrane remained under the upper lid. The corneal ulcer had healed and the child had become rosy adn healthy."

Bacteriological examination, of which the date is not given, was as follows:

Staining: Loeffler's blue, no diphtheria bacilli. Gentian violet, few cocci. Culture: First, on serum, staphylococci; second, on agar, staphylococci and one colony of streptococci; third, on gelatin, staphylococci aurei in great numbers.

It is mentioned that the mother and two brothers had severe sore throat at the same time as the patient and one of the latter had subsequently a paralysis of the soft palate. No mention is made of any membrane seen in the throats of any of the family.

Guibert regards the case as one of chronic diphtheria of the conjunctiva, and thinks the bacteriological examination was made too late to show the diphtheria bacilli.

In the Transactions of the American Ophthalmological Society, 1897, Dr. Lucien Howe, in a paper on the pathology of membranous conjunctivitis, reports two cases, one of which was exhibited at the meeting of that society in Washington. In the treatment he mentions 18 methods which he tried, all of which proved of little or no value. He also gave a summary of 11 other cases, which had been reported by other observers, 7 of which were by Guibert and included the case above referred to.

My own case was published in 1897 in the *Journal of Eye, Ear and Throat Diseases*. As that journal was of very limited circulation, and is no longer published, and as I have recently again had the patient under observation, I feel justified in again calling attention to it.

CASE.—The patient was a little girl of 10 years from Shenandoah County, Virginia, and came to the Presbyterian Eye, Ear and Throat Hospital March 22, 1897. She was an only child, healthy and well grown. Her father, who accompanied her, was an ignorant countryman. The mother is a deaf-mute. The condition of the right eye was normal. In the left the cornea had sloughed a long time since, and there was some secretion of a catarrhal character at the inner canthus. Protruding slightly from under the upper lid was a growth. On everting the lid this was found attached all along the upper margin of the tarsal cartilage. This growth was fibrous in character and extended over most of the upper lid. The history obtained was that the eye had been "about the same" for six years. That a number of physicians had treated it in various ways, always, however, with the same result, i. e., no result. The under surface of the lid was covered with a membrane. I regarded the growth as an organized membrane. This growth was clipped off with scissors and the base cauterized with carbolic acid. Next day the membrane was observed more closely. It was thick, yellowish white, and easily detached, leaving a bleeding surface underneath.

It had all the macroscopic appearances of a diphtheritic membrane as seen in the throat. Tube cultures on blood serum were made and sent both to the pathological department of the University of Maryland and to Dr. Flexner of the Johns Hopkins Hospital. No diphtheria bacilli were found. Dr. Flexner reported numerous colonies of the staphylococcus aureus. The bacteriologists decided that no diphtheria was present at this time. Then followed attempts to destroy the membrane. It was cleaned off daily, and all sorts of remedies applied to the bleeding membrane, including alum, sulphate of copper, carbolic acid, pepsin, Loeffler's solution and the galvanocautery, and twenty-four hours after the application of each the membrane had reformed and all was as before. Finally, April 21, I dusted some jequirity powder over the lid. On the 22d there was a typical jequirity membrane over the whole conjunctiva. On the 24th the membrane was very thick, and the swelling of the lids the most excessive I have ever seen. There was also some membrane on the outside of the lower lid. On the evening of the 27th the child complained of a slight sore throat, and the nurse saw a small patch on the left tonsil. Next day I did not go to the hospital, and on the 29th there was a well-formed patch of membrane on the left tonsil and some on the fauces. Dr. Henry B. Thomas, of the hospital staff, was asked to see the case. April 30 cultures were made and membrane taken from both eye and throat by Dr. Thomas and Dr. Stokes of the health department. Temp., evening, 99.4. May 1 Dr. Stokes reported the case as almost certainly diphtheria, and an injection of 1,000 units of antitoxin serum was given. Temperature, morning, 99.4; evening, 101.

May 2.—Temperature, morning, 99.4; evening, 100.4. In the middle of the day the larynx became slightly involved and there was a little difficulty in breathing; 1,500 more units of antitoxin were injected; also some tablets of one-tenth grain of calomel were given. Child slept well each night.

On May 3 temperature, morning, 98.4; breathes well; voice clear; membrane still in throat. From this time on Dr. Stokes kindly made and examined cultures at intervals.

The following is Dr. Stokes' report:

Health Department, City Hall Annex, May 4, 1897.

Dr. Herbert Harlan. Dear Sir:—The report upon the case. McGhee, examined on Friday, April 30, by Dr. Thomas and myself, is as follows: Pus from left eye; cover slip; many long bacilli with pointed ends, staining regularly with methylene blue; few cocci and pus cells; no fungi nor yeast cells in fresh specimen; no tubercle bacilli present. Cultures: Blood serum, 12 hours. Many cocci and diphtheria bacilli. Left tonsil: Membrane, cultures on blood serum. Practically pure diphtheria. Pure culture inoculated subcutaneously into guinea-pig. The animal died in forty-eight hours, and the autopsy presented the usual lesions of experimental diphtheria. Cultures from seat of the inoculation showed a pure culture of the bacillus of diphtheria.

The results of these tests clearly prove the presence of a virulent diphtheria in the lesions of the throat, and it would seem from the clinical history of the case that this organism was originally introduced from the eye. Very respectfully,

Wm. Royal Stokes, M.D.,
Bacteriologist to the Health Department.

May 17 Dr. Stokes further reported: "The cultures from the throat of the case McGhee are practically pure diphtheria. The eye is free from diphtheria bacillus."

The patient went home June 15, 1897, the diphtheria bacilli having disappeared from cultures made from the throat about a week previously. At that time the appearance of the closed eye was not very different from its appearance on her arrival. On opening the lids, however, the whole of the conjunctiva, ocular and palpebral, was completely covered by membrane. She still had light perception in the eye.

Oct. 9, 1906, nine and a half years later, the patient again consulted me. There was complete symblepharon, the whole conjunctiva having been destroyed. She came primarily on account of weakness of the right eye, which turned out to have an astigmatism of + 1.50 at 45,° and secondly to see about the possibility of wearing an artificial eye in the left side. As it was impossible for her to remain in the city, or to return again in the near future, she was advised against operative measures, with that end in view.

The above case is worth reporting on account of its rarity, but the most interesting general question is that in regard to the diphtheria. Was this a mere accidental attack with which the chronic membrane in the eye had nothing whatever to do, or were there always a few lurking diphtheria bacilli in this chronic membrane—too few for the bacteriologists to discover—and were they stimulated into active life and a good culture medium supplied by the action of the jequirity, and a conjunctival diphtheria thus started, which four days later appeared as unquestionable diphtheria of the throat? The former is the simpler solution. I acknowledge a leaning toward the latter view.

A CAPSULOTOME.*

R. Denig, M.D.
Ophthalmic Surgeon, German Hospital.
NEW YORK.

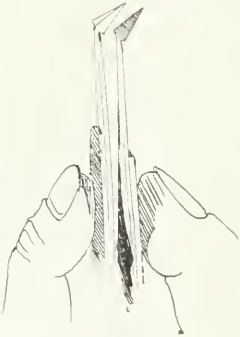
(Illustrated.)

The instrument is used to remove a part of the anterior capsule in cataract extraction.

When closed, it looks like a keratome; open, it shows two blades. an anterior and a posterior one, wide ridges on the inner side of each blade.

The instrument is introduced into the anterior chamber, the posterior blade penetrating the anterior capsule of the lens near its periphery, the anterior remaining outside the lens. It is then pushed forward toward the inferior edge of the pupil, closed, and withdrawn from the eye.

Thus far I have had very good results. In the third case I operated on I had to deal with what seemed to be a rather tough capsule of a brownish-looking cataract. I thought it advisable to make a tongue-shaped circumcision of the anterior capsule with the cystotome, corresponding to the inferior and lateral edges of the pupil. before entering the capsulotome, as I was afraid of a rupture of the posterior capsule and escape of vitreous. Since then I have done this circumcision in all cases, although I know that escape of vitreous seems to be a very rare occurrence, when we use the capsular forceps for the same purpose.



Open.

Closed.

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* Presented to the Section on Ophthalmology of the New York Acad of Med., Feb. 18, 1907.

I have not seen any serious complications. In two cases of milky cataracts the nucleus moved a little toward the wound in withdrawing the instrument, which rather helped the exit of the lens. In two cases the opening of the anterior capsule, made by the instrument, was not large enough for the exit of the nucleus and had to be enlarged by the cystotome; this seems likely to happen with tough capsules.

I have used thus far the instrument in nine cases only. In all these cases iridectomy was performed and homatropine given before the operation.

I see no objection to the capsulotome in simple extraction; perhaps in some cases of narrow pupil a smaller size of the instrument might be used.

There may be a field for the instrument in the discission of the clear lens and in certain cases of secondary cataract.

The name capsulotome is not quite correct; it cuts in the first act of its application like a keratome, while in the second act it works like a capsular forceps.

I would like to mention that before devising this instrument I experimented for a time with another one constructed on the principle of a conductor's punch.

The instrument was made by E. B. Meyrowitz, 104 East Twenty-third street, New York.

A CASE OF PRIMARY GUMMA OF THE SCLERA.

Charles D. Jones, M.D.
Ophthalmic Clinical Assistant, Massachusetts Charitable Eye and Ear Infirmary; Oculist Boston Dispensary; Consulting Oculist Malden Hospital.

(Illustrated.)

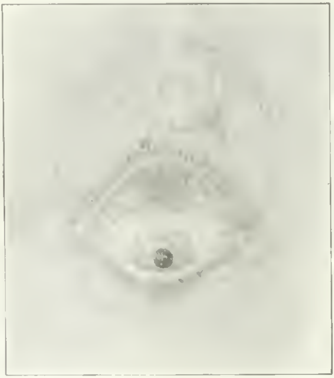
The following is reported with the object of placing on record a case which is interesting largely because of its rarity.

Woman, age 36, single, bookkeeper by occupation, consulted me Oct. 30, 1906. Her disease began four weeks previous to the date of the first visit.

Inspection of the right eye showed the following condition: Occupying a position about 3 or 4 millimeters above the cornea was a diffuse, sligthly nodulated swelling, very red and inflamed. In the center of this swelling is a bright yellow spot. It is underneath the conjunctiva, and apparently located in the sclera. Above and to the temporal side of this is a swelling resembling a staphyloma. Nothing abnormal could be detected in the fundus, but the lesion was too far forward to be accessible to examination with the ophthalmoscope. The family history is somewhat tuberculous. The mother's family is said to have been tuberculous, and her mother died of consumption at the age of 35. One sister and four brothers are living and in good health.

Personal History.—Patient has a cough and some expectoration. Gives about the usual indefinite history of so-called rheumatism which we are accustomed to hear in response to a leading question. Has been operated on twice for scrofulous glands under the jaw, the last time several years ago. She is a rather spare woman and somewhat anemic.

The diagnosis seemed to lie between a localized tuberculous process and a gumma, with the weight of evidence, as I thought at the time, in favor of tubercle. She was, however, put upon iodid of potassium pending further study of the case. The sputum was examined for tubercle bacilli, with negative result, and the iodid was increased. On November 9 one milligram of tuberculin was injected subcutaneously; twenty-four hours later the eye, so far from showing any local reaction, was distinctly better. There was no rise of temperature and the pulse was 100. From this time until November 19 the iodid was given in increasing doses up to the limit of tolerance and the local condition slowly improved. The area of inflammation in the chorioid began to subside and whiten out, the yellow spot which has been described gradually moved down, a healing process taking place at the same time in the upper part where the infection first started, and on November 10 was almost in con-



tact with the cornea. The spot had by this time become much whiter, the staphylomatous condition in the upper temporal part of the eye was unchanged. The general condition of the patient was considerably improved. She was now taking thirty-five drops of a saturated solution of potassium iodid three times a day and the cough had ceased.

From the course of the disease and its reaction to specific treatment I consider it to be a case of primary gumma of the sclera. A specific trouble of this character usually originates in the ciliary region and thence extends to the sclera, but the first explanation seems the more probable, in consideration of the normal appearance of the chorioid and the ciliary body. While syphilitic disease of the adjacent parts, such as the chorioid, is of the commonest occurrence, it is seldom seen in this form, being usually disseminated. A typical gumma of the chorioid, with breaking down of the tissues, is said by Parsons not yet to have been reported.

Most of the reports which I have examined acknowledge the similarity between these conditions and those due to tubercular troubles. Indeed, it is stated that the gross appearance is identical in the two diseases; but the course of this case points to a specific origin. When last seen, Dec. 29, 1906, the eye presented no appearance of active inflammation, but showed some signs of a passive congestion. The disease seemed to be practically cured and the vision was normal.

DIFFERENTIAL DIAGNOSIS BETWEEN HEADACHES OF OCULAR AND NASAL ORIGIN.*

MELVILLE BLACK, M.D.

DENVER.

When your chairman invited me to prepare a paper upon this subject, I felt like demurring, because without certain corroborative information to say this is a nasal headache or that an ocular headache is not easy. It is comparatively easy to say that frontal or occipital pain which is much increased when the patient stoops over, and is associated with acute coryza, is of nasal origin. It is equally easy to say that a headache is ocular when it invariably follows the use of the eyes. We find, on the other hand, that the reflex pain from the nose or from the eyes in many cases is symptomatically the same, and it is only by exclusion that a diagnosis can be made.

Intranasal appearances are frequently deceptive. Each individual is a law unto himself. What is productive of reflexes in one nose will not have the slightest influence in another. The most extreme abnormal nasal condition in some individuals is productive of no discomfort beyond the possible difficulty in breathing, while in another the slightest turbinal contact is sufficient to cause discomfort. Therefore, we can not judge by inspection alone whether the nose is responsible for headache. The eyes are, in my experience, a more common cause of headache than the nose, and in consequence, there being nothing positive in the nose, should be given the benefit of the doubt and examined carefully to determine the extent of the causative influence. Even then a positive statement can not be made that they are the cause until the ocular defect has been corrected for a period of time sufficient to be positive.

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* Read before a joint meeting of the Colorado Ophthalmological and the American Laryngological, Rhinological and Otological Societies.

If the headache continues, then a most searching inquiry into the nasal condition should be made. Any nasal abnormality found or suspected should be considered a possible cause of the headache. Its correction will many times result in success.

There are forms of headache which are so plainly of nasal origin that the symptoms will exclude all other causes. Here is an illustrative case. A man of 40 who has enjoyed good health, and has always been free from headache, says that a few weeks ago he caught cold and suffered from an attack of acute rhinitis, and that ever since he has been having more or less headache, sometimes in the back of the head, sometimes in the front and again it will be so diffused that it is all over; seems as though his head will burst; stooping over is very painful. I should feel justified in making a diagnosis of sinusitis from such a history, and should be greatly disappointed if intranasal inspection did not show very little to justify it. Generally speaking, when we have abundant evidences in the nose, such as pus, etc., we do not have much pain because there is free drainage. It is when the drainage is poor or absent that we have extreme pain. A case of sinusitis will certainly at times be painful because the drainage is not likely to be free at all times.

Pressure in the middle turbinated region, either from hypertrophy of the turbinate or from turgescent or boggy swelling of the mucous membrane of the septum opposite the middle turbinate, is not likely to be productive of severe headache. The pain is generally frontal and is referred to as between the eyes, or back or over one eye. It is a dull pain, and is fairly constant, but is much worse at times than others. The use of the eyes, even though they be absolutely normal, will cause increased discomfort. So far as headache is concerned, I do not think the cause, inasmuch as it lies between the eyes and the nose, should long baffle our diagnostic skill.

When we consider the nose in its relation to the eye as a causative factor in some of our ocular diseases of obscure etiology, then we are upon ground which is more or less insecure, but nevertheless tenable. It should be made stronger, however, as we have abundant clinical evidences of the causative relation. At present we can at least urge that every ocular disease with obscure etiology should excite upon the part of the observer a feeling that the nose may be a possible etiological factor.

Reviews.

GONORRHEAL SEPTICEMIA AND PYEMIA.*

A. Lemierre and M. Faure-Beaulieu.

[Reviewed by W. Gordon M. Byers, M.D., Montreal.]

While ocular metastases, secondary to gonorrhea, have been observed by the profession for now over a century, a relatively greater interest has been taken in the subject during recent years as the result of our better understanding of the systemic phases of the gonococcus. Practically nothing is known in regard to the ocular changes in these conditions because no material has been obtainable for pathologic examination. The gonococcus has been described by Morax, Van Moll, Knapp and Sym in the secretion from cases of metastatic conjunctivitis, and by Etievant in the discharge from a case of suppurative dacryoadenitis; but this is the only bacteriological proof that we have of the existence of ocular inflammations from systemic gonorrheal infection. Our knowledge of these conditions is based, practically in its entirety, upon the presumptive clinical evidence, and, until we have opportunities for studying the ocular changes in cases of this nature, we must look to general pathology, which has done so much of late years in this field, for indirect light on this obscure subject.

The paper of Lemierre and Faure-Beaulieu is a study of systemic gonorrhea in all its phases; but it is of interest to oculists because of the preliminary survey of the known general changes which must necessarily precede metastases as well in the eye as in other parts of the body. The three well-known theories in regard to gonorrheal metastasis are discussed by the writers as follows:

The existence of a gonococcal toxin has been proved beyond doubt by the work of several investigators; but in regard to the exact action of this substance we are still greatly in the dark. We do not know, for instance, if this poison can diffuse itself throughout the system from the initial point of infection; if it can of itself set up the secondary manifestations or exactly what manifestations it tends especially to develop; or if its action is a purely local one, intimately connected with the presence of the gonococcus itself.

Likewise the rôle of the secondary infections, held of great importance by certain workers, appears to be a more and more restricted one as our bacteriological technic improves. These secondary infections really do exist at times; but they constitute the exception.

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* Gazette des Hôpitaux, February, 1907.

More frequently the gonococcus is found in the inflammatory or suppurative centers in association with the organisms of secondary infection; with the streptococcus, staphylococcus or pneumococcus.

On the other hand numerous clinical observations published during recent years have placed beyond question the aptitude of the gonococcus to produce many and varied metastatic complications. The facts indeed are so numerous and well founded that one can now follow the gonococcus in the different stages of its perigrinations; can see it at the point where it penetrates the veins, as it circulates in the blood and in the metastases.

Wertheim saw at certain points in the vesical mucous membrane of a woman suffering from gonorrheal cyclitis and arthritis, thrombotic capillaries and vesicules which contained gonococci in abundance. In divers cases of generalized gonorrheal infection one has observed phlebitis of the dorsal veins of the penis during life (Woss), and at the autopsy, along with inflammation of the prostate and the vesiculæ seminales, phlebitis, at times suppurative, of the periprostatic venous plexuses. These facts amply demonstrate the route which the gonococcus takes to force an entrance into the general circulation; and how the local veins, once affected, offer no further resistance to anything which may be carried away by the blood current.

It is exactly in the circulation of patients suspected of generalized gonorrhea that observers have had for several years the idea of searching for the gonococcus. The reports where the microbe are said to have been found by direct cover-slip examination can not be received without reserve; but the cultivation of the blood during life has been followed up to the present time by successes, sufficiently numerous, to place beyond doubt the reality of sanguinous infection. Positive results in this direction have been obtained in thirty-two cases.

But in this infection of the blood it is altogether exceptional if the microbe, once launched in the general circulation, does not stop at one or several points in the organism and there set up lesions. This is the third stage of the gonococcus. To-day observations abound where one has been able to detect it, both in life and autopsies in the inflammatory or suppurative centers which have been set up; in the articulations, endocardium, pericardium, pleura, lungs, skin and subcutaneous cellular tissue.

It is then well demonstrated that gonorrheal metastases are for the most part but the result of gonorrheal infection. This is a theory which has been held up for a long time in France by certain writers, but was especially developed by M. Balzer in his report in 1900 on "Les infections généralisées dans la blennorragie."

Like all the bacterial infections, that of the gonococcus can be classified from a clinical and anatomical point of view under two different aspects. Sometimes the specific microbe passes into the circulation and sojourns there for a shorter or longer period without originating any secondary localization; it has to do here with a pure septicemia. Sometimes it stops at certain points in the body and sets up metastases. These may remain simply inflammatory or pass on to suppuration, realizing then that which one designates more particularly pyemia. But it is impossible from a clinical and pathogenic point of view to separate these two orders of facts; because, if the inflammatory lesions do not always pass on to suppuration, this latter is always the consequence of a pre-existing inflammation. One therefore should group the facts of gonococcal infection with secondary localization under the name of metastatic septicemia.

Gonococcal septicemia, particularly in its grave forms, is encountered much more frequently in males. One has observed this during all ages. Most often it breaks out during the course of a florid gonorrhea; but at times it appears when the gonorrhea seems to have been cured for a long time, or when it exists merely as a chronic discharge, passing even unobserved. To be noted is the exceptional case of Griffon, where the articular manifestations appeared before the urethritis.

The point of departure of the infection in man is most often the urethra, especially when the inflammation has invaded the posterior urethra and involved the prostate and the vesiculæ seminales; in women the vagina, uterus and inflamed tubes, with or without participation of the pelvic peritoneum. But at times the source of the infection can be less deeply seated. Macaigne and Finet have reported a case of gonorrhea following simple balanitis; and in little girls a vulvitis can become the point of departure of a generalized infection. Finally, there exist the observations of gonorrheal metastases appearing in the newly born affected with gonorrheal conjunctivitis.

Certain gonococci appear particularly virulent and to have a tendency not to remain localized, but to readily invade the body. One has seen several individuals contaminated at the same source present all the metastatic localizations. Such are the observations reported by Vaquez, Laubrey and Antomy; and an experimental fact of Ahmann (highly reprehensible) is still more suggestive. This author having inoculated the urethra of a healthy subject with gonococci, isolated from the blood of a man affected with generalized gonorrheal infection, saw not only a urethritis develop, but a septicemia with secondary localizations in the synovial sheaths of the lung.

If the virulence of the microbe is of great importance it does not seem to follow from the observations that general infection is especially the lot of subjects previously less resistant or blemished, we can only point to the observations of Barbiani where the infection developed in a diabetic who recovered, and that of Doleris, where a mortal infection broke out in a woman six months pregnant.

On the other hand, the metastatic localizations readily pick out points of lessened resistance; arthritis appears in articulations previously affected by other infections. Hochman has noted a gonorrheal metastatic phlegmon develop at a point contused a short time before; and Busquet and Bicholenne have reported suppuration in a hematoma of some standing. But the process is particularly frequent in endocarditis, where one sees the gonococcus become localized on valves which have been previously damaged. Finally, one has attributed the beginning of the infection to catheterization of inflamed urethra; but in the great majority of cases no exciting factor can be made out.

ALYPIN IN OPHTHALMOLOGY.[1]

W. ZIMMERMANN, M.D.

GOERLITZ, GERMANY.

[Reviewed by R. Rembe, M.D., Chicago.]

Zimmermann has employed alypin in all kinds of operations about the eye. According to his experience, he comes to the conclusion that alypin is undoubtedly the first and only substitute for cocain; it possesses almost all the advantages and lacks the disadvantages of cocain. Its vaso dilatory properties, dreaded by several authors, may be obviated by an admixture of adrenalin. Subcutaneous injection of 1 per cent. solution with or without adrenalin rendered the removal of the tear sac painless. For enucleation of the eye thirty drops of a 1 per cent. solution combined with adrenalin injected at four different places into Tenon's space proved sufficient, after previous instillation of a few drops into the subconjunctival sac, to make the removal painless; even the cutting of the optic nerve caused no inconvenience. In all operations involving the globe he resorted to solution from 1 to 5 per cent. combined with adrenalin. Complete anesthesia sets in within a few minutes, foreign bodies can be removed immediately, no injurious effects upon the corneal epithelium have even been noticed. It has no influence upon the accommodation and it does not dilate the pupil; therefore, tonicity of iris is better and hence is less apt to be caught in the wound. Alypin has not nearly such poisonous properties as cocain. After repeated sterilization its good effects remained the same. Zimmermann is of the opinion that the introduction of the drug is a decided advance in ophthalmology and warmly recommends its use. (Alypin is mono-hydrochlorid of benzoyl-1-3 tetro methyl diamino -2- ethyl isoprophylic alcohol. It comes in form of a fine white powder, is easily soluble in water. The price in Germany is $1.00 per ounce.)

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[1] Klin. Monatsbl. f. Augenheilkunde.

CONTRIBUTION TO THE STUDY OF CORNEAL TRANSPLANTATION.[2]

C. Pandelescue and V. Gomoni.

[Reviewed by R. Rembe, M.D., Chicago.]

It has long been the aim of ophthalmic surgeons to successfully transplant a transparent cornea. Attempts have been made as far back as the old Egyptians, but without success; the new cornea either becomes opaque at once or its transparency is lost in a short interval. The experiments on dogs which Pandalesca and Gomoni performed in the Surgical Anatomical Institute show good results toward overcoming the difficulties; it remains to get similar results on man. The method of procedure is as follows: Two dogs are anesthetized, the field of operation thoroughly disinfected, the external palpebral canthus is widened, the ball is fixed and lifted up, and by a circular incision through the conjunctiva about 2 to 3 mm. from the cornea the conjunctiva is dissected up and by means of a small pair of scissors half the thickness of the cornea is removed. The resulting flap is transferred to the eye of the other animal that has been operated upon in a similar manner. The flap is not sutured, it is held in position by the lids, which are sewed together. In nearly all cases the piece became adherent and a permanently clear cornea was the result.

MERCURIAL TREATMENT IN EYE DISEASES.[3]

Prof. Schmidt-Rimpler.

[Reviewed by R. Rembe, M.D., Chicago.]

Schmidt-Rimpler strongly advocates the use of mercury in eye diseases, making extensive use of this remedy not only in the syphilitic forms, but also in the non-syphilitic. He prefers to administer mercury in form of intramuscular injections, for which he employs the following formula: Corrosive sublimate, gr. 7½; sodium chlorid, gr. 37½; distilled water, dr. 12½. Adults receive 15 drops of this solution as a hypodermic injection into the gluteal muscle. Hypersensitive persons get the blue ointment (half mercury) innunction one dram, children ¼ to ½ dram. It is of special interest to note in what non-syphilitic conditions Rimpler obtained good results with mercurial treatment: Severe forms of iritis, iridocyclitis, optic neuritis, myopic chorioiditis and detachment of the retina, which has been preceded by chorioidal changes. Progressive atrophy of optic nerve due to syphilis is not in the least influenced by mercury.

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[2] Revista de Chirurgie.
[3] Therap. Monatschr.

TREATMENT OF PHLYCTENULAR ULCERS WITH FIFTY PER CENT. LACTIC ACID SOLUTION.[4]

BRUNO SYLLA, BREMEN.

[Reviewed by R. Rembe, M.D., Chicago.]

Sylla recommends its use as follows:

Eye is put under cocain anesthesia, the loose epithelium over the ulcer wiped. The surface of the ulcer, then the progressive margin (half moon), including the vessels running to the ulcer, are touched with 50 per cent. lactic acid solution. After-treatment consists of mydriatics and cold applications, followed up with moist dressings. Within 48 hours the ulcer is ordinarily cleared up completely, then dionin in powder. Adenoids, which are nearly always present, should be removed. The main advantage claimed over galvanocautery or any other cauterizing agents are that the cicatricial sequelæ on the cornea clear up and in a few weeks are hardly perceptible.

MURIATE OF AMMONIA AS A THERAPEUTIC AID IN CLEARING UP CORNEAL OPACITIES.[5]

DR. PICK, KÖNIGSBERG, GERMANY.

[Reviewed by R. Rembe, M.D., Chicago.]

Pick sets forth that muriate of ammonia (1 per cent. sol.) is effective when all other remedies, like dionin, subconjunctival injections and massage with different ointments, accomplished nothing. The author believes that certain chemical influences upon the pathologically-changed corneal tissue takes place, in so far that the incrustations, which are partly accountable for the opacities, become dissolved. The method is contraindicated in recent opacities.

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[4] Wochenschr. f. Ther. and Hyg. d. Aug.
[5] Centralblatt f. pract. Augenheilk., No 6

IRIDECTOMY IN GLAUCOMA WITH INCARCERATION OF THE IRIS.[6]

Dr. Vollert, Leipsig.

[Reviewed by R. Rembe, M.D., Chicago.]

In performing iridectomy incarcerations of iris in the corners of the corneal wound takes place. This condition should be encouraged, as we secure a permanent preservation of the normal tension. Vollert reports four cases thus treated with success. The method originated with Holth, of Christiania.

PARENCHYMATOUS KERATITIS TREATED WITH HETOL.[7]

P. Cohn, Manheim.

[Reviewed by R. Rembe, M.D., Chicago.]

Cohn has successfully employed hetol and cocain in a 1 per cent. solution for the treatment of subacute and acute forms of parenchymatous keratitis. The remedy also proved effective as subconjunctival injections in cases of herpes of the cornea, deep ulcers of the cornea, uveitis and recurrent forms of scleritis. (Hetol is sodium cinnamate, a white crystaline powder soluble in water.)

SOPHOL, A PROPHYLACTIC IN OPHTHALMIA NEONATORUM.[8]

Herf, Woman's Hospital, Basel.

[Reviewed by R. Rembe, M.D., Chicago.]

Sophol in efficiency is said to be equal to nitrate of silver and protargol, but decidedly less irritating to the eye. It is a combination of formaldehydenucleinacid and silver, containing 20 per cent. of the latter. It is a yellowish powder not affected by light; 5 per cent. solutions do not irritate the eye at all, 10 per cent. solutions only slightly.

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[6] Muench. Med. Woch., No. 50.
[7] Muench. Med. Woch., No. 28.
[8] Muench. Med. Woch., No. 20, 1906.

Reports of Societies.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting Feb. 12, 1906.

DR. F. C. HOTZ, *President.*

ANTIPARTUM PURULENT CONJUNCTIVITIS.

Dr. Willis O. Nance reported a case observed within the first 24 hours of life. Even at birth the eyes were swollen and red, and a drop or two of yellow matter oozed from the left eye on opening of the lids. One day later the eyes presented the clinical appearance of a well-defined purulent conjunctivitis of several days' duration; the upper lids were so swollen as to render eversion extremely difficult, the palpebral conjunctiva was velvety and presented deep furrows, the eyes were bathed in creamy pus and the left cornea was slightly hazy. The discharge showed gonococci in abundance. The disease ran a favorable but protracted course of seven weeks. The mother was a primipara, aged 22; labor had been brief and easy, the membrane having ruptured one and one-half hours before birth. The infant weighed eight pounds and was decidedly cyanotic.

Nance is of the opinion that the gonococci were introduced directly through the unruptured membranes of the amnion, and that the ophthalmia was immediately due to an endometritis of the same nature.

A HYSTERICAL GIRL WHO PLACED BROKEN PIECES OF GLASS IN HER EYE.

Dr. C. W. Heath reported the case of a 16-year-old girl who secretly placed in all some 40 pieces of glass in her conjunctival sac on various occasions in order to arouse the sympathy of the attendants in the institution in which she was detained. No injury of the cornea resulted, although some of the fragments must have remained in the eye over night. All the stigmata of hysteria were found.

OPTIC NEURITIS WITH BEGINNING OPTIC ATROPHY CLOSELY ASSOCIATED WITH A LESION OF THE SINUSES.

Dr. G. F. Suker: When first seen, the patient was suffering from a bilateral optic neuritis with beginning atrophy on one side; a month later the vision suddenly fell to 0.1 in each eye, despite very energetic strychnin and mercurial treatment. An examination then revealed some congestion of the nasal mucosa and some interference with the sinuses. Curettage of the ethmoidal revealed pus and necrotic tissue; vision immediately improved and is now 0.6 and 1.0, respectively.

Dr. H. M. Fish had seen the case with Dr. Suker. Dr. Fish emphasized the fact that negative nasal findings are inconclusive, since cases have been reported in which only congestion of the nasal mucosa was presented a few hours before death, but in which the sinuses were found filled with pus postmortem.

Dr. F. E. Brawley has seen the vision improve from 0.50 to 0.66 within a half-hour in a case of slight neuroretinitis associated with a mucous discharge from the nose. Normal vision was restored under treatment.

Dr. J. E. Colburn has seen marked lowering of vision result from operation upon the turbinal bodies—in one case from normal to 0.1 over night, with subsequent return to normal.

Dr. F. A. Phillips has seen a marked disturbance of vision, blurring of the disc and general hyperemia of the fundus accompany acute sinusitis due to influenza. The eye condition subsided on the improvement of the sinusitis, but recurred when it again appeared. Dr. Phillips believes the retinal affection to be due to a disturbance of the chorioretinal circulation.

Dr. J. F. Burkholder cited a case of complete and permanent blindness in one eye due to a turbinectomy, which was followed by severe hemorrhage and a three days' loss of consciousness.

Dr. F. C. Hotz added a case of thrombosis of a central vein and retinal hemorrhage, with permanent loss of the upper half of the field of vision due to exceptionally profuse hemorrhage occurring three days after an operation on the turbinals. The operation and vascular lesions may well have been merely coincident.

A SPLIT-FLAP FOR THE REPAIR OF BOTH LIDS.

Dr. E. F. Snydacker has used a large temporal split-flap for this purpose after an operative sacrifice of a large portion of both lids in carcinoma. The flap is cut into halves, the one to restore the upper lid defect and the other to restore the lower lid defect, the pedicle forming the outer canthus. Dr. Snydacker has been unable to find any record in the literature of others who have used this procedure.

PARALYSIS OF THE THIRD NERVE.

Dr. G. F. Suker reported a case of paralysis of the third nerve of specific origin, the lues having been contracted thirty years ago.

A short time ago the patient had a pseudo-apoplectic attack, and the following day there was complete ptosis of the upper right eyelid. The patient is taking 30 to 50 grams sodium iodid and applying 25 to 30 grams of mercurial ointment daily.

E. V. L. Brown, *Secretary.*

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Meeting of Jan. 31, 1907.

Priestly Smith, F.R.C.S., President, in the Chair.

Mr. Simeon Snell (Sheffield) related a case of tubercle filling the eyeball, in which the opsonic index was regularly taken. The patient was a boy, aged 12. Before coming under Mr. Snell's care in April, 1906, he had been under surgical treatment for tubercular abscesses in the arm and leg. At the time when he was seen the sight of the left eye had begun to fail four months before, and then the left eye was prominent and apparently slightly larger than normal; the conjunctiva was injected, but there was no pain. Vision was lost. The interior of the eye was occupied by a mass of yellowish gray material on which retinal vessels were seen. Tubercle of the chorioid and vitreous was diagnosed. Immediate enucleation was decided against. A little later the eye became inflamed and painful, its tension was raised and its size increased, and the interior became more filled up. Tuberculin injections were then tried, and the opsonic index was regularly taken. Tuberculin injections of 1/800 mg. were twice given. The boy greatly benefited, the eye became smaller and the mass in the interior was thought to be caseating. The eye was removed on September 17, by which time it was no larger than normal. The boy did perfectly well after the operation. Examination of the globe showed it to be tubercular, but bacilli were not found. The chorioid was the structure the most affected.

Mr. Snell also related particulars of a family, several of whom had suffered from nyctalopia. The earliest ancestor who suffered was the patient's grandmother. Information was obtained of 63 of her descendants extending to the fourth generation. Out of 64, 12 were affected with nyctalopia, 9 being males and 3 females.

A peculiar feature was that the males had girls affected and boys healthy, and the females had boys affected and girls healthy.

Mr. Arnold Lawson related two cases of acute streptococcic infection of the conjunctiva. Case 1 occurred in a child 16 days after birth. At first there was some swelling of the lids and a mucopurulent discharge. After ten days the cornea became infiltrated and the case ran a rapid and acute course. A tough conjunctival membrane developed, and within 36 hours of the first affection of the corneæ the sight was hopelessly destroyed. The general health was not affected. Swabs taken from the conjunctiva showed almost pure cultures of streptococcus pyogenes. Mr. Lawson did not see the case until the corneæ were infiltrated, and nothing seemed of any avail in allaying the course of the disease.

Case 2 occurred in a child convalescing from scarlet fever who was then attacked with measles. Ten days later the temperature was high and fluctuating as seen in pyemia, at the same time brawny swelling of the lids commenced. After a few days the discharge increased rapidly, the corneæ became suddenly infiltrated, and within 24 hours the condition was hopeless, and palpebral and ocular conjunctivæ of both eyes was covered with a dense, yellow, tenacious membrane. The child was exceedingly ill, and recovery was doubtful. The sloughs eventually separated, but the cicatricial contraction of the conjunctiva was very severe. The infection was a mixed one due to *Staphylococcus pyogenes aureus* and *Streptococcus pyogenes*. The contraction in both cases was very severe, and in neither case did treatment seem of the slightest avail in arresting the course of the disease.

Mr. Brooksbank James read some notes on stereoscopic vision. He remarked that most experiments which had been carried out had been conducted at comparatively short distances. He described an apparatus which he had introduced in order that the same may be estimated at the usual testing distance of, say, 6 meters. The apparatus was simple and at the same time most delicate in the estimation of the third dimension. It consisted of a box in which only the floor and end walls remained, the sides and roof having been removed. In the front wall was an oval aperture in its center. At each side was an electric lamp which illuminated the interior, the front and back walls were covered with black velvet. The floor was pierced with numerous round holes, each separated by an interval of about an inch. The test objects were white painted sticks of different sizes, and they were long enough for each extremity to be hidden behind the margin of the aperture in the front wall of the instrument when placed upright in the holes. In this way it was found impossible for a person using one eye only to tell whether one stick was in front of the other; they always appeared to be in the same plane. The apparatus could, of course, be used at any distance, and it afforded a convenient way of ascertaining the quality of the stereoscopic vision in cases of partial amblyopia of one eye.

Mr. James alluded to the theories held with regard to the estimation of the sense of depth, and also to the importance of recognizing the several grades into which binocular vision can be divided. C. DEVEREUX MARSHALL.

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of Jan. 19, 1907, in Denver.

DR. E. W. STEVENS, Presiding.

EPIBULBAR GROWTH—SARCOMA.

Dr. E. R. Neeper of Colorado Springs showed a boy of 16 years, healthy and with a good family history, who had been injured four or five years before by a small piece of steel flying from a lathe and striking the left bulbar conjunctiva about 5 mm. from the nasal limbus. A small red joint remained, and during the past two months had grown and thickened, giving annoyance when the eye was turned inward. The growth was the shape of an elongated pear, stem downward, about 5 by 3 mm., and situated about 4 mm. from the nasal limbus at its nearest point. It was apparently about 1.5 mm. thick. Its general coloring was a reddish straw color, but it was stained or pigmented at points, and was very vascular, the vessels between it and the inner canthus being engorged. The growth was movable with the conjunctiva, but seemed to have some scleral attachment. One month later Dr. Neeper reported that the growth appeared slightly enlarged toward the inner canthus, was still more vascular, and that he believed it to be malignant, but had not secured consent to operative measures.

Discussion.—Dr. Jackson was reminded of the boy of 14 years with sarcoma of the globe, shown before the society in February, 1906 (see OPHTHALMIC RECORD, April, 1906, p. 186) and advised immediate operation.

Dr. Black considered the growth probably non-malignant, resembling pinguecula, and might contain a foreign body. He instanced two recent cases of pinguecula, from one of which he had removed a foreign body, causing the inflammation to subside.

Drs. Strader and Spencer thought the slight apparent pigmentation was staining from a bit of iron filing that had corroded.

Drs. Hilliard and Libby regarded the growth as very suspicious and would remove at once and have it examined microscopically.

REATTACHMENT OF THE RETINA.

Dr. W. C. Bane of Denver presented a patient recovering from detachment of the retina that had been shown before the society two months previous. The retina was apparently completely reattached. Vision with correcting lenses is 3/50. The treatment had been ten grains of potassium iodid t. i. d. and subconjunctival injections of physiological salt solution twice weekly.

SCLEROSING KERATO-SCLERITIS.

A case of scleritis and keratitis in a young woman of 17 years was exhibited by Dr. Bane. The disease had developed two months before in the sclera at the nasal side of the right cornea. Congestion and thickening of the sclera was marked, the eyeball painful, and pains radiated through the right side of the forehead. Atropin and dionin were ordered for local use, and xv-grain doses of true sodium salicylate every four hours, with plenty of water. For a time there had been considerable improvement, but later the disease had extended into the cornea at the margin of the sclera, producing two distinct opaque spots near the center of the cornea. There had always been marked photophobia and profuse lacrimation, but no pain was felt after the end of the first week of treatment.

DIVERGENT SQUINT.

Dr. Bane also presented two cases of divergent strabismus. One was a woman of 40 years, with vision of 5/5 in each eye, having a deviation of 12°. The history indicated that the patient had never been able to fuse. Strange to say, she was wearing weak prisms with the bases in the opposite position from what she needed to stimulate fusion. The other case was a lad of 12 years. Vision of the right eye = 5/50, and with — 2 sph. ○ — .50 cyl. 180° = 5/5 +. L. eye = 5/15 + and with — 1 sph. = 5/4. The deviation was 15°, and 15° prism base inward enabled him to fuse at 5 meters.

DISCUSSION.

Case 2.—Dr. Hess advised examination of the anterior ethmoidal cells and subconjunctival injections of 5 to 10 minims of 5 per cent. soda cinnamate three times a week.

Dr. Black advocated search for defective metabolism or autoinfection.

Drs. Neeper and Patterson suggested that the opsonic index be obtained.

Drs. Coover and Strickler would use cod liver oil, the former adding guaiacol.

Case 3.—Examination of the refraction and training of fusion was advised by Dr. Black, and for the latter purpose Dr. Patterson advocated the stereoscope.

Dr. E. W. Stevens reported very successful use of dionin in scleritis and episcleritis, combined with constitutional treatment, and spoke of a case which recurred at each menstrual period, often painful, that was relieved by dionin.

Dr. E. R. Neeper spoke of a fleshy pterygium, greatly reduced by 5 per cent. dionin, instilled daily for four months. To this Dr. Coover added, later, a similar case which in ten days was so thinned that its removal by operation was much simplified.

Dr. Coover also reported magnet extraction of half of a pin in the anterior chamber of a child through a corneal incision, the pin having been shot into the eye by an air gun, grazing the nose in passing.

Dr. J. R. Robinson reported the destruction of an eye from a falling curtain pin attached to a lace curtain, the pin penetrating the upper eyelid, sclera and lens.

Dr. G. F. Libby reported epithelial growth and symblepharon from a foreign body embedded in the bulbar conjunctiva for eight years in a man 24 years old. A cinder had lodged in the conjunctiva, midway between the corneal limbus and the external canthus, eight years before, and no attempt had been made to remove it. It was surrounded by thickened reddish tissue, 3 mm. in diameter and raised 0.5 mm. above the surface. The growth was excised, prompt healing and restoration of normal tissue occurring. Dr. James C. Todd examined the growth microscopically, finding thickened epithelium and connective tissue and pronouncing it non-malignant. Old narrow bands of adhesion from the seat of the growth to the external canthus were not disturbed, as they did not interfere with the motility of the eye or its esthetic appearance.

Meeting of Feb. 16, 1907.

The February stated meeting was a joint session with the Colorado Oto-Laryngological Society and the Western Section of the American Laryngological, Rhinological and Otological Society, held in the Denver Academy of Medicine, Dr. W. C. Bane, vice-president of the national society, presiding.

The following papers on ophthalmological subjects were read: "Delayed Development of the Lacrimal-Nasal Duct," by Edward Jackson, M.D., and "Differential Diagnosis between Headaches of

Ocular and Nasal Origin," by Melville Black, M.D., both of which will be printed in full in the OPHTHALMIC RECORD, and "Ocular Disorders of Nasal Origin," by James A. Patterson, M.D.

GEORGE F. LIBBY, *Secretary.*

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting Jan. 15, 1907.

Dr. G. E. DE SCHWEINITZ, Chairman, presiding.

A CASE OF SPONTANEOUS GANGRENE OF THE EYELIDS.

Dr. George C. Harlan showed a case of spontaneous gangrene of the eyelids. The patient was a well-nourished, previously healthy boy, 4 years of age. The attack had come on suddenly with a swelling of the lids of the right eye, which in two days involved the right side of the face and head, as far back as the ear. The child had not been in contact in any way with animals or their secretions, and the other members of the family were healthy. Examination four days after the onset showed an abrasion of the upper lid; the lid was of a violet color and there was an intense edema of the lids, face, and head on the right side. The eyelids of the left side were edematous, but there was no swelling of this side of the face. The child was restless and fretful; the temperature was 101° and later 103°; pulse, 124. Urine examination was negative. The discharge that oozed from between the lids contained great numbers of pneumococci, but no other bacteria could be found.

A number of deep incisions were made down to the bone (a depth of one and one-half inches), from which serum, but no blood, flowed, and the swelling was greatly reduced. Marked improvement in the general condition followed, the temperature falling in a few days to 99°. The skin of both lids became black and necrotic, and in a few days sloughed, leaving a granulating surface. The treatment consisted in quinin and good diet, free incisions of the lids, and the application of flaxseed poultices, made with 0.5 per cent. solution of carbolic acid. After the sloughs separated, tarsorrhaphy was performed.

Dr. de Schweinitz spoke of the interesting pathological results which have been reached in the examination of some of these types of so-called malignant edema, either as they followed an injury or as they arose apparently as an idiopathic affection, and stated that in some of them diphtheritic bacilli had been found, and under such circumstances the ordinary serum-therapy would be indicated.

He also referred to a case of ulceration of the skin and subcutaneous tissues, not of the lids, but of the arms and trunks, which he had observed, in which almost pure cultures of the bacillus pyocyaneus had been found. He did not know whether a similar observation had been made in any of these gangrenous processes of the lid.

ABNORMAL CONTRACTION OF THE EYELIDS, IN ASSOCIATION WITH MOVEMENTS OF THE JAW.

Dr. Posey exhibited a case showing abnormal contraction of the eyelids, in association with movements of the jaw, occurring in a Hebrew girl who had complained of dizziness and headache after near work. The right lid had drooped from birth, and it had been remarked that in mastication the lid upon that side would move up and down. The ocular movements were good and unrestricted in both eyes, with the exception of an overaction of the right superior rectus muscle, which was dependent upon a paresis of the right inferior rectus muscle. The irides and the ciliary muscles were unaffected in both eyes. Vision was also normal, both eyes being slightly hypermetropic. No motion was communicated to the lid by simple opening of the mouth, nor were the eyeballs themselves affected by this act. There were no palsies of the muscles of the face.

Dr. Posey referred at length to a paper by Sinclair, who had observed 6 cases and had divided all cases in the literature into various groups. Of 32 cases analyzed by this author ptosis was present in 27 instances and doubtful in 1, and of the 27 cases in which ptosis was present the superior rectus was paretic in 10. The condition has been noted as hereditary in several instances. It is not always congenital, for cases have been remarked which appeared in later childhood. The explanation of the association is difficult and is still hypothetical, owing to the absence of autopsy. The most reasonable theory is to the effect that the levator receives nerve supply from the motor nuclei of the fifth nerve as well as from the nuclei of the third.

CHRONIC OPHTHALMOPLEGIA EXTERNA.

Dr. Posey showed also a case of chronic ophthalmoplegia externa, occurring in a girl 16 years of age, who was otherwise well and strong. Ptosis of a marked degree was present upon both sides; when both eyes were fixed, the right eye was directed straight ahead while the left was slightly divergent. All motion was abolished except downward, the globes being movable in that direction to the extent of 2 mm. Vision was practically normal and the irides and the ciliary muscles functioned perfectly. Dr. Posey said that this rare disease develops generally in infancy or early in childhood, without symptoms indicating involvement of other parts of the nervous system and slowly progresses until all or nearly all of the extraocular muscles, including the levator, are palsied. The course is essentially chronic. Both eyes are affected, though rarely simultaneously. The affection should not be termed "infantile nuclear atrophy," as the manifestations often do not appear until late in life.

Dr. Posey pointed out the difficulty in differentiating cases of this nature from congenital palsies of eye muscles, but stated that this could be frequently done by the presence of secondary deviations in paralytic cases. As no uncomplicated case has come to section, the pathogenesis is still obscure. The condition, however, is best explained by a slow necrosis of the nervous elements, evidencing itself in an atrophic condition of the ganglion cells in the nuclei, with secondary atrophy of their nerve fibers.

In conclusion, he pointed out that, although in many cases the nuclear degeneration which occasions the ocular palsies does not progress further, it is not unusual for the ophthalmoplegia to form part of a more general process and to be but the ocular manifestation of tabes or other diseases of the cerebrospinal system.

A CASE OF CHRONIC NUCLEAR OPHTHALMOPLEGIA.

Dr. Zentmayer presented a case of chronic nuclear ophthalmoplegia. The patient was a male, 34 years of age, married and the father of four children, three of whom were dead, the one living being 6 years of age. Occupation, cook. He noticed a drooping of the right upper lid five months ago. He had been unable to read with the left eye for the past six months, but could still do so with the right eye. Fifteen years ago he had venereal disease, probably chancroids. Until eight or ten years ago he was troubled with headache and one year ago he had boring pains in both tibiæ. He never had had diplopia; he had no symptoms other than those ocular, pointing to intracranial disease. Dr. Weisenberg reported that the neurological examination was entirely negative, all of the cranial nerves, not ocular, being normal, and there was no loss of power or alteration in sensation. The K. J.'s were normal; the urine contained neither sugar nor albumin.

Corrected V. of R. E. = 6/10; L. E. = 6/6. With each eye p.p. = 20 cm. with + 4 D. Visual fields were normal.

On the right side there was complete palsy of the third and sixth nerves. Slight power was still retained in the fourth nerve. On the left side the third nerve was incompletely paralyzed; the iris had been spared, but the ciliary muscle was much impaired, while the levator was weak and the sixth nerve was paralyzed. The action of the superior oblique was impaired, but not so markedly as in the right eye. There was at times bilateral vertical nystagmus. The fundi were normal except for slight pallor of the disc in the right eye.

He was placed upon K. I. in ascending doses, which had not been well borne. At present the condition was much the same as at the time of the first visit, except that there was apparently more power in the right levator and that the iris on the left side was paralyzed.

A CASE OF UNUSUALLY EXTENSIVE INVOLVEMENT OF THE CRANIAL NERVES IN TABES.

Dr. Zentmayer reported also a case of unusually extensive involvement of the cranial nerves in tabes. The patient, a man 51 years of age, stated that objects first appeared double two years ago, but that the double vision disappeared when the right lid drooped some months later. He complained of numbness in the feet and legs, of some pain, and of girdle sensation. R. E. V. = 5/10; L. E. V. = 5/10. On the right side there was complete external palsy of the third nerve and of the fourth nerve. On the left side there was paralysis of all of the external muscles supplied by the third nerve except the levator. On both sides the irides responded promptly to convergence impulse, but to concentrated light only. Both nerves were decidedly red-gray. The visual fields showed very little contraction. V. was unimproved by glasses. Dr. Weisenberg's report on the neurological conditions was briefly as follows: "Romberg's sign; some hypotonus of all of the joints, especially of the lower limbs; sensation of touch diminished over both feet, front of each tibia, and the chest; sense of position and muscle sense disturbed in the lower limbs; some ataxia of the upper limbs; all tendon reflexes lost, even by reinforcement; bladder and rectal disturbances; sensation for touch and for pain diminished in the distribution of the right fifth nerve."

Dr. de Schweinitz, referring to Dr. Posey's case of movement of the eyelids in association with movements of the lower jaw, thought it interesting to place on record an observation which he had made in the Philadelphia General Hospital in a patient whose right orbicularis contracted markedly in association with movements of the eyeballs to the right, that is to say, there was an associated contraction of the orbicularis with contraction of the right external rectus and left internal rectus. The case will be reported *in extenso.*

A CASE OF ASSOCIATED MOVEMENTS OF THE EYELIDS AND JAWS WHICH HE HAD REPORTED SEVERAL YEARS AGO.

Dr. Harlan referred to a case of associated movements of the eyelids and jaws which he had reported several years ago. The condition in his case was not congenital, and the contraction of the levator muscle was more pronounced than in Dr. Posey's case, especially when the jaw was moved in a direction away from the eye affected.

THE ANATOMIC CHANGES (UVEITIS PROLIFERATIVA, FUCHS) IN THREE CASES OF OPHTHALMIA SYMPATHETICA.

Dr. E. V. L. Brown, of Chicago (by invitation), presented a paper on the anatomic changes (uveitis proliferativa, Fuchs) in three cases of ophthalmia sympathetica, and with slides and drawings corroborated Fuchs' recent findings that the essential change in the eye which causes sympathetic inflammation of its fellow is a proliferation of epithelioid cells *within* the confines of the iris ciliary body, or choroidea, and which he named uveitis proliferativa in contrast to the fibrinoplastic exudation upon the uveal surface in ordinary traumatic uveitis not producing sympathetic inflammation of its fellow. (The paper will appear in full in a subsequent number of the *Archives of Ophthalmology*.)

Dr. Shumway said that Fuchs' paper, in which he claims that the characteristic changes in an eye producing sympathetic ophthalmia were proliferation of the cells of the uveal tract, and not the ordinary plastic exudation, marked a distinct advance in the study of the pathology of the disease. Dr. Brown's findings apparently were confirmatory of those of Prof. Fuchs, and it remained to be seen if further investigation showed that a separation of the two conditions were justifiable. Dr. Shumway referred to Ruge's reply to Fuchs' paper, in a recent number of *Graefe's Archives*, in which he disputed Fuchs' findings in many particulars, and adhered to his belief, which corresponds with Schirmer's, that plastic inflammation and the condition producing sympathetic ophthalmia were not separate entities, but differed in degree rather than in character. Ruge further denied that the chorioid was the part chiefly affected, and challenged the statement that superficial plastic inflammation could not be produced by a sympathetic process, unless accompanied by a mixed infection, and claimed that choroidal sarcomas were not capable of producing a true sympathetic inflammation. Dr. Shumway spoke also of zur Nedden's experimental paper, in which he had reported the production of a chronic plastic inflammation in animal's eyes by the injection of portions of tissue from eyes producing sympathetic disease, and also of blood serum from the patients into the vitreous body of the animals. Zur Nedden had also obtained an organism, of the pseudodiphtheria class, from the rabbit's vitreous, which he had been able to cultivate, and by injection into other eyes produce the same chronic plastic inflammation.

Further, that he had been able to check a sympathetic process in a patient under observation, by subcutaneous injection of serum from another patient who was recovering from the disease. Dr. Shumway thought that zur Nedden's results, if confirmed, were even more valuable than Fuchs', because they might be of assistance in the clinical study of the process.

Dr. de Schweinitz said that not the least important point which Fuchs had developed in his remarkable paper was his elimination of the time limit in sympathetic ophthalmia, which was a matter of very great clinical significance.

EXTENSIVE INCISED WOUND OF THE SCLERA.

Dr. John T. Carpenter exhibited a patient with extensive incised wound of the sclera. The patient, a butcher, was injured by the accidental thrust of a long, narrow-bladed knife with which he was cutting meat. The cut extended along the cheek upward through the sclera, making an incision through the eyeball, extending from the lower conjunctival cul-de-sac to the cornea. As the man objected to enucleation, one scleral suture and several conjunctival sutures were inserted. Considerable reaction followed, with milky white opacity of the cornea, but the eye gradually quieted down, the cornea cleared, and the eyeball was now painless and almost free from injection. He reported the case on account of the extent of the wound and the remarkable recovery, which was unique in his experience in injuries of such a character.

Dr. Harlan said that some experiences which he had had with eyes injured by cuts through the ciliary body had led him to be very cautious in the retention of such eyeballs, on account of the danger of sympathetic trouble. It was, of course, possible for the man to escape sympathetic disease, but he considered the eye a very dangerous one.

Dr. de Schweinitz said that he considered the case a very remarkable one on account of the extent of the injury, and that it showed that it was wise, when the scleral wound was very long, to introduce one scleral suture, which could be removed in two or three days. He thought that the entire absence of inflammatory symptoms, including discoloration of the iris, was a point in the man's favor, and made the eye a safer one than it would otherwise be. The edema of the cornea had been very marked, and there was an enormous chemosis, which rapidly subsided on the fourth day, with the discharge of a yellowish-brown serum. The case also proved the value of the administration of mercury and large doses of salicylate of sodium under such circumstances.

GLAUCOMA FOLLOWING A SUBCONJUNCTIVAL INJECTION OF A SOLUTION OF CYANID OF MERCURY.

Dr. de Schweinitz made some remarks on glaucoma following a subconjunctival injection of a solution of cyanid of mercury. After referring to Mazet's case of glaucoma as the result of a subconjunctival injection of iodate of sodium, he recorded the following observation: A patient, twenty-six years of age, with uveitis of syphilitic origin, who had been under treatment for a month and who had greatly improved under the administration of iodids and mercury and scopolamin mydriasis, was given an injection of 8 minims of a solution of cyanid of mercury, 1 to 5000. Within twenty minutes after the injection, associated with intense pain, the eyeball became exceedingly hard, tension + 2; the cornea, previously clear, steamy; and the eyeball, previously white, greatly injected; while vision, which had been 6/20, fell to hand movements. Under the influence of hot compresses and the instillation of a 1 per cent. solution of pilocarpin, frequently repeated, the attack gradually subsided without the necessity of operative interference, and had practically passed away at the expiration of four hours. On the following day, except some tenderness in the neighborhood of the injection, all symptoms had disappeared and vision was quite as good as that recorded prior to the injection. Before the use of the cyanid of mercury, the patient, on a number of occasions (about a dozen), had received subconjunctival injections of normal salt solution, and, therefore, this attack of increased intraocular tension following the subconjunctival injection could not be attributed to any psychic disturbance, which, curiously enough, had been one of the explanations given in the discussion which followed the presentation of Mazet's case. Moreover, it was well known and had been experimentally demonstrated that subconjunctival injections could cause rise of intraocular tension, although the original curve indicating the rise is soon followed by a fall.

Dr. Shumway spoke of the great value of dionin in reducing the tension of eyeballs, especially where there was an inflammatory exudate or blood in the anterior chamber, and cited several cases under treatment at the University Hospital clinic, in which temporary hypertension had been promptly lowered by its use.

Dr. Pyle reported three cases of acute glaucoma caused by a mydriatic, two of which had yielded to the use of dionin, pilocarpin, eserin, and hot compresses, while the third required posterior sclerotomy. He had come to consider dionin of great value in such cases, and with heat and the myotics almost a specific for the reduction of tension. Dr. Pyle distinguished between artificially induced acute glaucoma and acute exacerbations of chronic glaucoma, in which latter he had no experience with dionin.

EDWARD A. SHUMWAY, M.D., *Clerk of Section.*

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

DR. VANDERSTRAETEN has been made professor of ophthalmology in Loewen, Germany.

DR. KARL THEODORE HERZOG, Bavaria, has been awarded the Austro-Hungarian medal for art and science.

DRS. O. M. SHREVE and G. WILLIAM SCHLINDWEIN have been appointed to the eye department of the staff of St. Vincent's Hospital, Erie, Pa.

DR. CHARLES S. STEWART, of Auburn, Ind., has been reappointed eye, ear, nose and throat surgeon for the Baltimore & Ohio Railroad, Chicago Division.

DR. WM. L. RICHARDSON, of Boston, has recently received the appointment as one of the trustees of the Perkins Institute and Massachusetts School for the Blind.

PROF. DR. OTTO SCHIRMER, Director of the University Eye Clinic in Greifswald, has been invited to accept a similar appointment to the University of Kiel, to succeed Völckers.

A CONFERENCE of the local charities in New York City was held February 19 in the interests of the blind. Their possibilities of education along industrial lines were discussed.

PROF. DR. ANTON ELSCHNIG, of Vienna, will soon assume charge of the University Eye Clinic in Prag, Bohemia, which position was made vacant by the sudden death of Professor Czermack.

THE ORIGINAL INNER-POLE MAGNET.—Through an oversight a note to Dr. Gifford's article on the inner-pole magnet was omitted from our last issue. The original magnet now in use at the Basle clinic can now be obtained from Fr. Klingelfuss & Co., Petersgasse 7, Basle, Switzerland.

AT THE meeting of the Central Texas Medical Association on January 8 and 9, Dr. James M. Woodson, of Temple, was elected chairman of the section on eye, ear, nose and throat, and Dr. Roy H. Gough, Hillsboro, was elected secretary of this section.

"COLDS," ASTHMA AND "SPECS." One of my friends gets a "cold" whenever the frames of his glasses for compound astigmatism are bent. I believe to have proven to my own satisfaction the existence of an occasional ocular origin of asthma.—Leo Wolf, *Medical Record*.

A GERMAN physician instilled a 50 per cent. solution of silver nitrate into the eyes of a newborn child, with resulting severe inflammation and loss of sight of one eye. He claimed that he was overworked at the time and escaped with a fine of $25.00. The child's father is now suing for $19,000 damages.

THE medical departments of Kentucky University and the University of Louisville have consolidated. The eye, ear, nose and throat department is represented in the new faculty by Drs. T. C. Evans and J. M. Ray. The Louisville Medical College and the Hospital College of Medicine of the Central University have also consolidated. Drs. P. R. Taylor and William Cheatham have charge of the department of eye, ear, nose and throat.

THE school inspection report of the Baltimore public schools shows that 12,109 children were examined last January; 4,362 of these were found to have some ailment or defect and 118 were excluded entirely from further school work. The conditions found were as follows: pediculosis, 1,436; enlarged tonsils, 1,344; eyestrain, 604; adenoids, 597; unvaccinated, 256; imperfect teeth, 452; blepharitis or sore eyes, 135; strabismus, 80; skin disease, 91.

DR. L. EMILE JAVAL, of Paris, France, well known to ophthalmologists as the inventor of the Javal ophthalmometer, died recently at the age of 68 years. His writings were chiefly upon the subject of physiologic optics. In the year 1900 glaucoma claimed him as a victim and he became entirely blind. His work after this unfortunate occurrence dealt chiefly with the conditions of the blind. He wrote at this time "Entre Aveugles" (From the Blind to the Blind).

The New York Association for the Blind is raising a fund of $100,000 to erect a building as a home for the association and to furnish a salesroom for the articles made by the blind and a workshop for the men. Andrew Carnegie and Smith Ely have each contributed $10,000, and Jacob Schiff has contributed $5,000 on condition that the remainder be raised. European institutions are far ahead of our own in the management of this problem. It is to be hoped that New York will be more successful than Illinois in this venture, as it may be remembered that the legislature here recently gave up the plan as too expensive.

THE *Ziegler Magazine for the Blind,* the first publication of its kind in this country and the second in the world, has just come from the press. It is now being sent to the sightless thousands in America through the benevolence of Mrs. William Ziegler, widow of the backer of several arctic expeditions, who has donated the funds to carry out the enterprise. It is estimated that the cost of the magazine to Mrs. Ziegler will be $70,000 a year. It is more bulky than the ordinary publication and is twelve by thirteen inches in size, comprises fifty sheets and weighs almost one pound. The sheets are printed only on one side. They are very thick, since the characters, consisting of raised dots and dashes, have to be first made on a metal plate and then reproduced on the paper. The Braille system of type is used.—*Chicago Record-Herald.*

SYPHILITIC LESIONS OF THE EYELIDS.—Dr. Frank J. Parker, New York, said that the appendages of the eyes may be the seat of any or all of the different lesions of syphilis. The most common are the exanthemata. On the eyelids they are of rapid growth and may occur at any age and period of the infection, and, while they frequently involve the entire lid, they result in little destruction of tissue. As a pustular eruption in congenital syphilis they are most frequent in infants. It is not uncommon to find the diffuse gumma on the eyelids in the early stages of the diffuse eruption. Among the rare forms of extra-genital infection we find chancre of the eyelids which may easily be mistaken for lupus, epithelioma, a suppurating hordeolum or chalazion. The right eye is the one most liable to infection. The condition is more common in males than in females. Ocular infection may frequently be due to accidental causes. A physican may become infected by the coughing of a patient during a throat examination; five such cases are reported by Fournier. Infection may occur as other extra-genital infections are liable to do from the use of public towels, sponges, etc. The chancre most frequently is located on the conjunctival surface and rapidly involves the entire lid. Chancre of the eyelids is always accompanied by enlargement of the preauricular or the submaxillary gland. If treated early, and there is no destruction of tissue or deformity, the prognosis is good. A case of syphilitic granuloma of the lower lid was reported and another of chancre on the margin of the upper lid.—*Jour. A. M. A.*

A PLEA FOR NEW METHODS IN THE PREVENTION OF BLINDNESS.—Dr. Lucien Howe, Buffalo, showed that ophthalmia of infancy is the most important cause of blindness and how much it costs both this state and the United States to care for this class of unfortunates. The best preventive thus far obtained for this affection is a 2 per cent. solution of silver nitrate. Other compounds of silver have recently been furnished, some of which are said to have advantages over the nitrate of silver and not to possess the disadvantages. There is much ignorance in regard to these compounds and some of them are no doubt greatly overestimated as germicides. He thought the obstetrician and not the oculist must decide on the relative value of these drugs as prophylactics. He urged obstetricians to experiment with these various compounds of silver in a large series of cases at large hospitals to decide this point.—*Journal A. M. A.*

UNUSUAL OCULAR MANIFESTATIONS OF ARTERIOSCLEROSIS.—The two conditions here noted by Zentmayer (*Journal A. M. A.*, March 2), are optic atrophy and spasm of the central artery of the retina. The literature and theories of optic atrophy from arteriosclerosis are reviewed and a case reported which seems to him to substantiate the view that with sclerosis of the ophthalmic or internal carotid artery pressing the nerve upward against the unyielding edge of the internal end of the fibrous canal, a transverse pressure atrophy, finally involving the entire diameter of the nerve, may occur. Such a process, he shows, would account for the symptoms and appearances in the case reported. The literature of spasmodic blindness is also reviewed and a case reported in abstract in which the spasm of the ocular vessels was repeatedly observed ophthalmoscopically. It is also unique in this respect, as only three similar cases, but of a single observation of the spasm, were discovered in a search through the literature: those of Wagenmann, Benson and Sachs, all of which are reproduced in abstract.

The patient had arteriosclerosis and probable incipient tabes. The prognosis in these cases varies according to whether the spasm is simply a manifestation of a general spasmodic disorder or of a general grave vascular disturbance. The treatment is that of early arteriosclerosis, high tension and spasm. Iodid of potassium is the only reliable drug for the arteriosclerosis. Moderation in all things is of more importance than regularity of dosing. The nitrites are available for the spasm, and heart tonics are usually needed. With symptoms of obstruction, massage of the eyeball should be tried. The value of iridectomy is questioned: It may be justified in certain cases, but its efficiency against future attacks is dubious.

PRACTICAL LEGISLATION FOR THE PREVENTION OF BLINDNESS FROM OPHTHALMIA NEONATORUM.—Dr. F. Park Lewis, Buffalo, said that there is no discussion among scientific medical societies in regard to the statement that ophthalmia neonatorum is dependent on an infection and, also, that it is almost absolutely preventable either by keeping the cocci from entering the eyes of the newborn child or by using some germicide that will destroy their virulence before they have time to propagate. Several well-known measures are effective. Infection is less frequent and less disastrous in the hands of hospital obstetricians and others than formerly, but he thought that ophthalmia is quite as common as ever among careless practitioners and midwives, and that no protection whatever is afforded the child in such cases, and hence there should be some legal measure that would offer protection. He advised bills in the legislatures of the several states providing registration of births with boards of health; gratuitous distribution by the board of light-proof, sealed ampoules containing the selected germicide to all obstetricians, midwives and others making application for them; instruction of all such persons as to possibility of ophthalmia: measures of protection and necessity for immediate treatment; a requirement that on each birth certificate there shall be a signed statement that the germicide provided by the board of health or some other accepted prophylactic has been used in each eye of the child on the day of birth; a penalty in case the child lose the sight of one or both eyes when the statement is not made that the measures of protection recommended have been taken. He asked the endorsement of the society as to the propriety of enacting such laws.

Dr. Peter A. Callan, New York, said that the necessity for such a paper is a sad commentary on the indifference of the profession. A society for the prevention of blindness ought to be established in New York City, with branches in all the large cities.

Dr. L. Bolton Bangs, New York, said that while he approves of compelling obstetricians and midwives to make use of prophylaxis, educational propaganda will reach the source of infection. The matter brings in the social and economic questions with which the society should concern itself.—*Journal A. M. A.*

A MERITORIOUS BILL.—House File 589 in Legislature of the State of Minnesota, by Mr. Timberlake of Hennepin county, is a bill requiring the examination of the eyes and ears of school children once a year, in September. Simple tests are to be provided, and the examination may be made by the teachers with the aid of test cards. A written report of such examinations is to be made to the State Board of Health and also to the parents or guardians of the children.

The bill requires nothing further, and it remains with the parents to have the defective ears or eyes attended to. The idea has been endorsed by the American Medical Association and by many state boards of health and medical associations. Yet it can not be said to be a measure in favor of the doctors. It does not provide a salary for any physician, and prompt attention to the defects found will in most cases save heavy bills later on, to say nothing of the vast difference in the welfare of the child. It is pitiable to think of the hundreds of children with defective eyes, scolded for stupidity or suffering with headache and eye strain, because no one has discovered the nature of their trouble. It has been demonstrated that early attention in such cases will often save children from ultimate blindness and deafness, that the truancy class is largely recruited from scholars suffering with defects in vision or hearing, and that a large percentage of criminals suffer from one or both of these afflictions.

No medical officer is necessary to carrying out the plan in the Timberlake bill. It has been adopted into law by Massachusetts, Connecticut and Vermont, where it has been highly satisfactory. Parents whose children need treatment are urged to have their troubles attended to, but if expense is a serious consideration, there are public dispensaries where free examination and medical attendance may be had. The plan is meritorious on its face, and ought to be given careful consideration by the legislature. It is certainly worthy of a fair trial in Minnesota.—The *Minneapolis Journal, March* 7th.

EXAMINATION OF EYES AND EARS OF SCHOOL CHILDREN.—The following is a copy of a bill now before the Illinois Legislature providing for the testing of the eyes and ears of school children. It is strongly urged upon all readers of this journal that they do everything in their power to help this bill. A strong letter to the Chairman of the Committee on Appropriations, Springfield, Ill., will materially help this worthy and much needed crusade. It was introduced by Mr. Billings, Jan. 23, 1907. Read first time, ordered printed and referred to Committee on Appropriations:

A BILL

For an Act to provide for testing the sight and hearing of pupils in public schools.

Section 1. Be it enacted by the people of the State of Illinois, represented in the General Assembly: That the State Board of Health and the State Superintendent of Public Instruction shall prepare or cause to be prepared suitable test cards, blanks, record books and other needful appliances to be used in testing the sight and hearing of pupils in public schools, and necessary instructions for their use; and the State Superintendent of Public Instruction shall furnish the same free of expense to every school in the State. The superintendent, principal or teacher in every school during the month of September in each year shall test the sight and hearing of all pupils under his charge, and keep a record of such examinations according to the instructions furnished, and shall notify in writing the parent or guardian of every pupil who shall be found to have any defect of vision or hearing, or diseases of eyes or ears, with a brief statement of such defects or disease, and shall make a written report of all such examinations to the State Superintendent of Public Instruction as he may require.

Section 2. The State Superintendent of Public Instruction, with the approval of the State Board of Health, may expend during the year 1907 a sum not greater than three thousand ($3,000.00) dollars, and annually thereafter a sum not greater than one thousand ($1,000.00) dollars, for the purposes of carrying out the provisions of this act.

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Original Articles.

A CASE OF EPITHELIOMA OF THE CHORIOID.

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NEW YORK.

The history of the case is briefly as follows:

Mrs. McK., aged 62 years, came under my observation Oct. 8, 1906. Last April the left eye became painful and red and there was considerable pain in the left side of the head. The patient consulted her family physician, who diagnosed the case as one of iritis and treated it accordingly. The pain gradually subsided, with the exception of occasional headaches. In August the patient discovered that she could see but little with the affected eye. She then consulted an oculist, who told her that she had an immature cataract in addition to the remains of an iritis. He observed that the cornea was a little hazy. The patient continued to have pain from time to time in and about the eye.

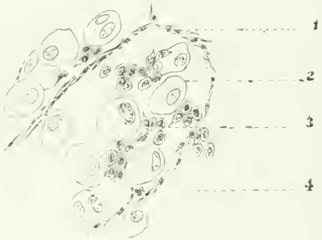
When seen by me there was very slight injection of the ocular conjunctiva of the left eye; the anterior chamber was very shallow; the pupil of moderate size and irregular from posterior synechiæ; the lens was completely opaque; tension was slightly above normal. There was a feeling of fulness in the eye and some dull pain in the left temple. The injection of the ocular conjunctiva was slightly greater in the outer quadrant.

On transilluminating the eye with the Sach lamp I found that the pupil transmitted light when the light entered the globe from all parts except in the lower outer quadrant. When the pencil of light impinged on an area extending from the ciliary zone to the equator of the globe and about one centimeter in the equatorial direction, in the outer lower quadrant of the globe, the pupil was dark. Vision equaled perception of light. Projection faulty above and to the nasal side.

I told the patient that in all probability there was a growth of a cancerous nature within the eye and advised enucleation. After considering the matter for some time, the patient consented to the operation and it was performed Oct. 21, 1906.

After the globe was removed transillumination enabled me to outline the exact site of the mass within. A meridianal line was marked on the sclera over the middle of the mass.

The globe was taken to the laboratory of the New York Eye and Ear Infirmary and macroscopical and microscopical preparations were made. The growth was found to involve the outer inferior anterior portion of the chorioid, and the ciliary body in this part. It pressed against the crystalline lens and projected into the vitreous chamber, reaching the median line. It appeared to be free from pigment other than that normally in the chorioid involved. The retina was detached throughout about one-half its extent.



1. Alveolar wall. 2. Sarcoma cells. 3. Endothelial cells. 4. Small cells (leucocytes).

Microscopical Examination.—The growth has developed from the chorioid, apparently from the layer of large vessels. The cells of the neoplasm lie in irregular alveoli, the walls of which are composed of connective tissue cells. The walls are very thin and in center of the tumor, where the alveoli are much distended, the walls are frequently partly obliterated. The cells of the new growth invade the outer part of the ciliary body and the root of the iris at the most anterior part of the growth. They also fill the spaces of Fontana and a few are found in the iris angle. Some of the tumor cells are found in Schlemm's canal and in the perivascular spaces of the anterior ciliary vessels adjacent to the neoplasm.

About three-fourths of the tumor mass is composed of the ordinary round and short spindle sarcoma cells with a slight infiltration of leucocytes. The rest of the cellular mass is composed of large, irregular, spherical cells which possess one or more oval nuclei with nucleoli. Although varying somewhat in size, they are fairly uniform. The multiple nuclei appear to be the result of division of the primary nucleus. All nuclei are placed near the periphery of the cell. Karyokinetic figures are not uncommon. The large cells are found in all parts of the growth, except at the very periphery. Their large size and the presence of a number of nuclei in some cells cause them to resemble giant cells, but on closer study the differences are found to be so great that they evidently do not belong in that category. The majority are mononuclear. There is much uniformity in size. Although direct transition has not been traced, it is very probable that these cells sprang from the endothelial cells of small blood vessels or lymph spaces. The alveolar-like arrangement of the cell masses gives the growth a rather close resemblance to the so-called alveolar sarcomata, which are sometimes met with in the tissues of the orbit and which are really endotheliomata. Similar growths have been observed and reported by Parsons, Neese and others, but they are very uncommon.

ACUTE RISE OF INTRAOCULAR TENSION FOLLOWING A SINGLE SUBCONJUNCTIVAL INJECTION OF A SOLUTION OF CYANID OF MERCURY.

G. E. de Schweinitz, M.D.

PHILADELPHIA.

That subconjunctival injections of various preparations of mercury, notably of the bichlorid of mercury, are sometimes followed not only by severe pain, but by positive damage to the tissues in which they are injected, is well known and constitutes one of the chief reasons why many surgeons have abandoned their use and substituted for them similar injections of physiologic salt solution. Even this substance, however, appears to be capable, according to the investigations of Alexander,[1] of producing "adhesions between the bulbar conjunctiva and sclera, partial gangrene of the conjunctiva, and also transient changes in the cornea and lens."

In a large experience with subconjunctival injections originally composed of bichlorid of mercury and in recent years usually of various strengths of sodium chlorid or of cyanid of mercury, 1-5000, I have never but once observed an unfavorable result with either of the last-named remedies other than transient pain and local irritation, and even these symptoms have been most exceptional. This one unfavorable result, and that fortunately only of a temporary character, occurred in a patient with the following history:

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[1] Archives of Ophthalmology, xxxv, 1906, p. 15.

A man, aged 29, consulted me on Jan. 19, 1906, for the relief of a marked uveitis of the left eye, which had begun three weeks prior to his visit, first with a conjunctival hemorrhage and later, it is said, with a hemorrhage into the vitreous. The patient's general condition was fairly good, and there was no history of infectious disease other than a vague one of a specific infection, during which, however, secondaries did not appear, and which apparently was not treated with the usual remedies. Urine was normal, and the blood count and blood composition practically normal. The vision of the right eye, after the correction of 1 D. of hyperopic astigmatism, with its axis 180, was normal, and the ophthalmoscope revealed no eyeground lesions. The vision of the left eye was 6/60, the tension slightly below normal, the anterior chamber deep, the iris discolored and its pupillary area thickened and slightly elevated. There was a fine, punctate keratitis, the vitreous was filled with thick opacities through which the fundus could be seen only dimly, revealing a disc with blurred margins and very dark tortuous veins. There was a marked contraction of the visual field to the temporal and upper side. Scopolamin mydriasis, mercurial inunctions, followed by iodid of potassium and pilocarpin diaphoresis, produced a rapid improvement, and one month later all of the lesions previously described had markedly lessened and vision had risen to 6/20.

During the course of the treatment on different occasions ten subconjunctival injections of physiologic salt solution were given, always, it seemed, with marked improvement. On February 26, the eye being practically white, only a few dots of the punctate keratitis still being visible, although the vitreous continued to contain numerous thick, web-like opacities, the tension being normal and the field full, a subconjunctival injection of ten minims of the cyanid of mercury, 1-5000, was given in the usual manner in the upper and outer portion of the bulbar conjunctiva between the superior and external rectus. Within a few minutes after the injection the patient complained bitterly of severe pain, and within half an hour there was an intense injection of the entire eyeball, marked steaminess of the cornea, so as to obscure the underlying tissues, decided rise of intraocular tension estimated at plus 2 by finger palpation, and a reduction of visual acuity to hand movements. The patient's pain was so great that no accurate estimation of the visual field was attempted. Hot compresses and the instillation of a solution of eserin, gr. 1 to the ounce, with a few drops of a 1-10000 solution of adrenalin, reduced somewhat the discomfort. This treatment was continued, substituting for the eserin a solution of pilocarpin, 2 grains to the ounce, and omitting the adrenalin until the attack subsided at the expiration of about five hours, when the tension was restored to normal, the steaminess of the cornea had disappeared and the vision was practically the same as it had been prior to the injection, namely, 6/20.

On the following day all traces of the disturbance had disappeared, with the exception of a small patch of congestion over the area of the injection and a little tenderness of the globe on palpation. The subsequent improvement of the case was more rapid than it had been prior to this accident.

Many subconjunctival injections have been given to the same patient since this period, but always with salt solution, and there have been no untoward symptoms of any kind. Vision at the present time is normal, and all traces of the uveitis, with the exception of some strings in the vitreous and some areas of peripheral chorioiditis, have disappeared.

At a meeting of the French Society of Ophthalmology in 1906, Mazet reported acute glaucoma after two subconjunctival injections of iodate of sodium.[2] No details are given, and I have not seen the original article. In the discussion which followed the presentation of this case, Darier commends iodate of sodium in subconjunctival injections in the treatment of glaucoma, and with it has succeeded in reducing the intraocular tension and establishing an analgesic effect. He questions the responsibility of the subconjunctival injection itself in the development of the attack of glaucoma which Mazet reports, although he is willing to admit that a subconjunctival injection might be the cause of an attack of glaucoma in an eye predisposed to it, exactly as the exciting cause of an attack of glaucoma is often attributed to fright, violent emotion, pain, etc., the *glaucoma emotif* of the French writers.

In the present instance the attack of increased intraocular tension which followed the subconjunctival injection of cyanid of mercury can not be attributed to this agent as an exciter in the sense in which fright or emotion, etc., has been given this rôle, because the patient was well accustomed to subconjunctival injections and did not even know that the fluid was of a composition other than that which he had frequently received. Evidently the injection of the cyanid of mercury was followed by so great a lymph stasis that the filtration processes, already disturbed by reason of the uveal tract inflammation, were temporarily checked and a sharp rise of intraocular tension occurred, amounting to an attack of glaucoma.

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[2] Die Ophthalmologische Klinik., Sept. 20, 1906.

In this connection it is interesting to refer to the observation of Wessely,[3] that after subconjunctival injections, in his experiments saline injections, there is a decided rise of intraocular tension, quickly followed by a fall, and he has succeeded by means of special instruments in graphically recording the curves representing the rise and fall of the tension. It is possible that under certain conditions, for example, those which existed in the eye of my patient, the primary rise of tension is not followed by a fall, but continues to increase, with the result that the phenomena of acute glaucoma develop.

HÆMORRHAGES WITHIN THE ORBIT, WITH REPORT OF A CASE OF SPONTANEOUS ORIGIN.

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(Illustrated.)

Hæmorrhages within the orbital cavity produced by traumatism are occasionally, though by no means frequently, met with, and then only by ophthalmic surgeons with a great deal of clinical material at their disposal. But where a hæmorrhage has developed within the orbit spontaneously the condition can only be regarded as one of more than usual rarity.

Intraorbital hæmorrhages may be classified into two groups: (1) The traumatic, and (2) the non-traumatic or spontaneous. In the traumatic variety the blood effusion may be an extravasation between the loosened periosteum and the bony wall of the orbit; or, again, the hæmorrhage may occur into the orbital cellular tissue; or, lastly, within what we understand as the oculo-orbital fascia, or capsule of Tenon. In the site last mentioned we find those hæmorrhages which have been reported as following operative interference for the relief of squint. Severe blows upon the orbit resulting frequently in fracture of the orbital wall, and in subsequent laceration or rupture of the orbital capillaries, is another cause to be considered. A more direct factor to be thought of is those injuries such as gunshot wounds aud stabs about the orbit, resulting in subsequent effusion of blood from the vessels injured in the course of the wound.

The spontaneous variety is met with decidedly less frequently. In the very few cases reported the condition has been attributed to scurvy, hæmophilia, disease of the walls of the blood vessels, or to

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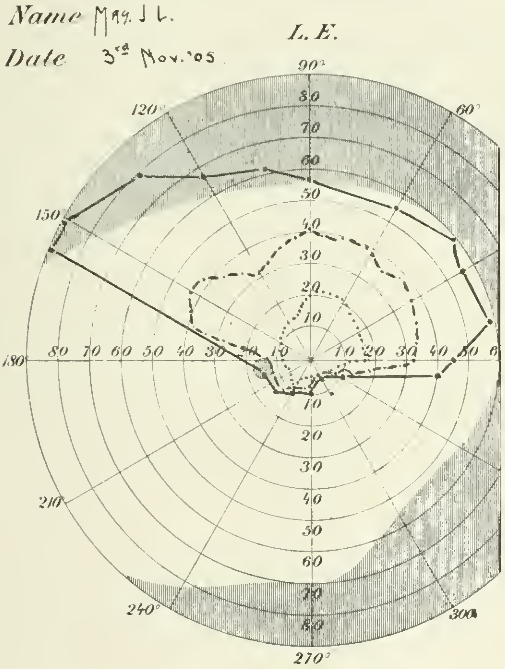
3. Klin. Monatsbl. f. Augenheilk., September, 1906.

sudden spasmodic muscular effort, as in violent coughing or retching. It is stated that the rarity of the spontaneous variety of hæmorrhage is probably accounted for by the uniform pressure exerted upon the vessels by the eyeball and soft tissues lying within the orbital cavity.

The symptoms produced by an intraorbital hæmorrhage of a pronounced type are a suffusion of blood beneath the conjunctiva and into the tissues of the eyelids. Exophthalmos is also present, with more or less restriction of the movement of the eyeball. When a condition of exophthalmos appears suddenly without any previous symptoms and this is attended with a coincident subconjunctival hæmorrhage, no doubt should remain in the mind of the clinician as to the diagnosis. Should there happen to be an absence of exophthalmos, other indications of pressure with the attendant sub-



conjunctival effusion and swelling of the lid should clear the diagnosis. It has long been considered that exophthalmos with a suffusion of blood beneath the conjunctiva and lids meant, of necessity, an intraorbital hæmorrhage with a coincident fracture of one or more of the orbital bones; but such an involvement must not necessarily be the case. On the contrary, one may come across fractures of the orbital walls without the appearance of the symptoms I have just referred to. Cases have been known to occur where the extravasation of blood did not collect beneath the conjunctiva and into the tissues of the lids, but followed the course of the injury into one of the accessory nasal sinuses or into the pharynx. Some cases such as these have necessitated the ligation of the carotid artery. The existence of a large hæmorrhage in the orbit not only impedes the free mobility of the globe, but may produce an impairment of vision by the pressure exerted upon the motor oculi and optic nerves, as in the case I am about to report.

The course usually followed in such conditions results in the subsequent absorption of the hæmorrhage in from three to six weeks, and in the complete restoration of all the functions of the eyeball. Destruction of the globe by neuroparalytic keratitis and abscess of the cornea may follow those cases of very extensive hæmorrhage and excessive protrusion when the lids can not be closed over the eyeball. Slight hæmorrhages as a rule disappear spontaneously; iced compresses and firm bandages generally assist absorption in the more serious cases. Allowing the blood to escape by an incision is not frequently resorted to, but such a procedure when necessary should be practised with the strictest aseptic precautions.

A case in point dealing with one of these very rare forms of spontaneous intraorbital hæmorrhage has recently come under my care.

Mrs. L., aged 42, of Montreal, Canada, consulted me during the past year complaining of dimness of vision in the left eye and of inability to distinguish objects beneath the level of her head when looking directly forward. On questioning her regarding the onset and subsequent course of the condition she complained of, I elicited the following history:

From March, 1904, to March, 1905, the patient had suffered from a dull pain in the left brow, quite moderate in degree, but nearly constantly present; this discomfort was always more severe when lying down on the left side. There was no sensation of thrill, but there was an occasional shooting pain in the globe, but this was never very severe. The eyeball never became red, and she had no occasion to test her vision. On March 1, 1905, she went to bed feeling considerably better after an attack of influenza which had kept her confined to the house for two weeks previously. During the night she was suddenly awakened from a sound sleep by an excruciating pain over the left eyebrow; there was no pain in the globe. The brow and left side of the face were very much swollen and the eyeball protruded considerably. This intense pain lasted for about an hour, and, becoming gradually less, finally disappeared completely three hours later.

Her family physician was called in on the following morning, when he found both lids so suffused with blood that they had to be forcibly separated with the fingers in order to obtain a view of the globe. It was seen that the eyeball was drawn upward and outward and that movement in all directions was impaired; the patient could not distinguish light from darkness. Hot poultices were applied to the eye and a great deal of the swelling of the lids subsided. A large suffusion of blood was noticed beneath the palpebral conjunctiva of the lower lid. The patient's description of this is that in color it resembled a piece of raw liver, and that it was about as thick and half as long as her little finger.

As the swelling of the lids subsided vision gradually returned, but the patient could only distinguish objects dimly above the level of her head with her left eye. The position of this eye upward and outward remained as was previously noted for about two weeks, but after that time it gradually resumed its normal position and free movement in all directions returned. She was given potassium iodide gr. xx three times daily, and adrenalin chloride 1:1,000 was applied to the conjunctiva at frequent intervals, which may have assisted in the ultimate disappearance of the blood which had collected beneath the conjunctiva of the lower lid.

The patient is a very large, well-nourished woman of German-Scotch extraction; she was born and has always resided in Canada. She is married and has four healthy children. She has always been a strong, healthy woman; excepting the usual diseases of childhood she has only had a minor uterine disorder and a femoral hernia reduced by operative measures. She gives a very indefinite history of rheumatism ten years ago, but this indisposition was not sufficient to confine her to bed at the time, and she did not require to call for medical assistance. She has, however, suffered for years from a type of varicose veins. This trouble has assumed the form of fine capillary hæmorrhages, like areas of ecchymoses, and these are often of large size. One can be seen at present above the knee about the size of a goose-egg. On one occasion she noticed an area on her thigh as large as a dinner plate. She has never suffered from the whip-cord variety, although these are present to a pronounced degree in her mother. There is no history of hæmophilia, and everything suggestive of lues has been carefully excluded. Heart disease, rheumatism, nephritis, gout, apoplexy, have all been excluded from her family history.

When I saw her for the first time six months after the onset of the trouble the eye complained of was to all appearances in every respect similar to its fellow; the lids and conjunctivæ were normal and free movement was present in all directions. The tear passages were patent and the cornea was clear. Sensation of the lid and of the cornea was unimpaired. R. V. = 6/6; L. V. = 6/24. (Two letters at head level.) Snellen type 1, good range; Snellen type 10, short words.

The pupils are slightly unequal in size, the left being somewhat larger than the right, and the former reacts a little more sluggishly to light and accommodation than the latter; there is no diplopia. The refractive media when viewed with the ophthalmoscope are all clear. The retina is *in situ*, shows no areas of degeneration, and nothing suggestive of macular or chorioidal change can be detected. The vessels are practically normal; no unusual tortuosity is present, and there is no indication of peripheral hæmorrhages. The veins, however, are somewhat full and the arteries very slightly sclerotic. On viewing the optic disc it appears somewhat pale, more particularly about the temporal and upper segments. This pallor, however, is by no means marked, though it does differ from the color of the disc of the healthy eye. There is no cupping of the disc and the veins do not pulsate. Tension of the globe is normal. Under mydriasis skiascopy showed no refractive aberration. The color sense is unimpaired. For field of vision see special chart.

I saw the patient three times during the past year and the condition has practically remained in *statu quo*.

On considering the diagnosis of the case I have just reported, a multiplicity of causes capable of producing such a condition as my patient presented when I first saw her must be systematically reviewed and excluded. Malignant tumors, as well as those of a benign nature can be put aside at once; the absolute suddeness of the onset of the attack, added to the fact that the swelling disappeared spontaneously in a comparatively short space of time, would endorse this conclusion. An infection of the lid and an extension backward to the soft parts behind the globe producing orbital cellulitis or tenonitis can be excluded by the fact that the lids were quite healthy and that no focus of infection could be detected. Syphilitic periostitis involving the optic foramen and thus producing a gradual occlusion of the ophthalmic veins would have been indicated by an earlier œdema of the lids; an absolutely negative specific history renders this etiological factor all the more unlikely. The accessory nasal sinuses were all carefully examined, and a possible extension of a diseased process from one of these sources has been excluded. A much more gradual onset would have characterized trouble extending from any one of these points. Traumatism is at once to be put aside. The absence of organic heart disease, added to the fact that there was no indication of arteriosclerosis and that no sensation of thrill had ever been experienced in the orbit, would render the possibility of aneurism unlikely. There remains, in my opinion, but one cause which I can think of as being responsible for this condition. The ophthalmic vein is formed by two branches: The superior, passing beneath the tendon of the superior oblique on the nasal side, above the internal rectus, and the inferior branch, which proceeds from the temporal side beneath the globe, passing upward and inward beneath it and the external rectus muscle. These branches join a short distance external to the optic nerve, a few mm. outside the optic foramen. In this instance there has in all likelihood been an old varix of the superior branch, to which no doubt the previous headaches of a year's duration may be attributed. This vein has ruptured spontaneously, and, producing an extensive extravasation of blood in the orbit, has involved the adjacent optic and motor oculi nerves, accounting for the subsequent course of events. That a large clot of blood was seen by the patient beneath the conjunctiva shortly after the onset of the attack, added to the fact that with the absorption of the blood and the subsequent disappearance of the tumor mass partial vision has been restored and that free movement of the globe has returned, are all confirmatory evidence in my conclusion.

Berger[1] reports a case comparatively recently where a definite disturbance of the motor oculi occurred in a 3-year-old child with intraorbital hæmorrhage, and which later recovered its function; the condition he reports, however, was the result of a hæmorrhage brought about by a definite orbital contusion.

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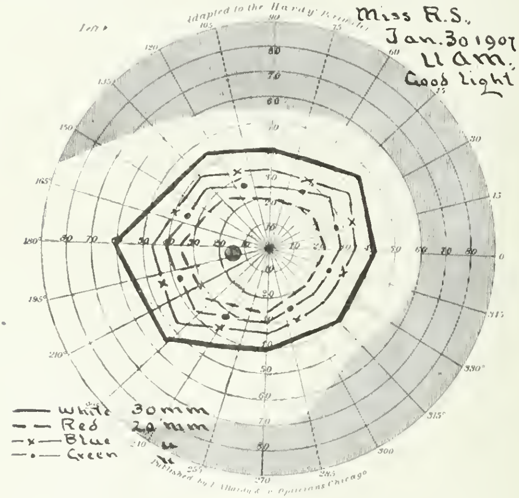
[1] Berger: Verletzungen der ausseren Augenmuskeln. Klin. Monatsbl. f. Augenheilk., November, 1905.

A CASE OF HYSTERIA IN WHICH ACCIDENTAL TRAUMA WAS SIMULATED BY PLACING PIECES OF GLASS INTO THE CONJUNCTIVAL SAC.*

Clarence W. Heath, M.D.
CHICAGO, ILL.

(Illustrated.)

The writer presents the report of this case because of its unusual character and because it shows to what extremes hysterical patients will go to accomplish their object.



Miss R.S.,
Jan. 30 1907
11 a.m.
Good Light

White 30mm
Red 20mm
Blue
Green

On Tuesday, December 17, there was brought to my office an inmate of the Chicago Refuge for Girls, Miss R. S., a girl 16 years of age. She complained of having gotten some pieces of glass into her left eye on the day before through the breaking of one of her lenses, caused by bumping her head against a wall. A very competent nurse who accompanied her had taken five pieces of glass out of the eye on the previous day. She also had removed three more pieces in the morning before bringing the patient to my office.

Upon examination I found the ocular conjunctiva over the lower portion of the globe and that of the lower lid somewhat injected. Careful examination showed no remaining pieces of glass and that no injury had been done to the cornea. I prescribed a simple lotion and directed them to return on the following morning.

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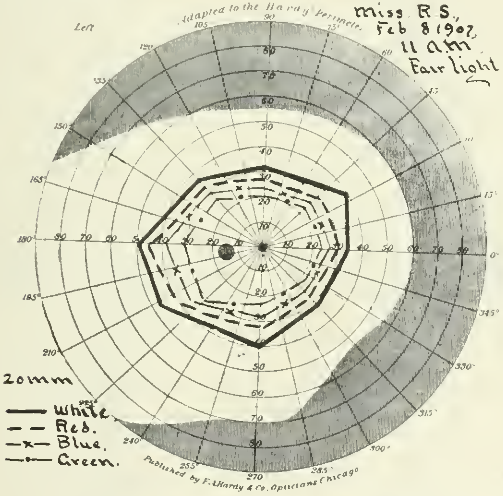
* Read before the Chicago Ophthalmological Society, Feb. 12, 1907.

At the appointed hour the nurse reported, to my surprise, that she had removed six pieces of glass before bedtime and four more before bringing the patient to me that morning. I was again unable to find anything in the conjunctival sac. More pieces were removed that same afternoon and again more the following morning before leaving home. Some sixteen pieces which had been taken out at the house were brought in for evidence. Again my search revealed nothing.

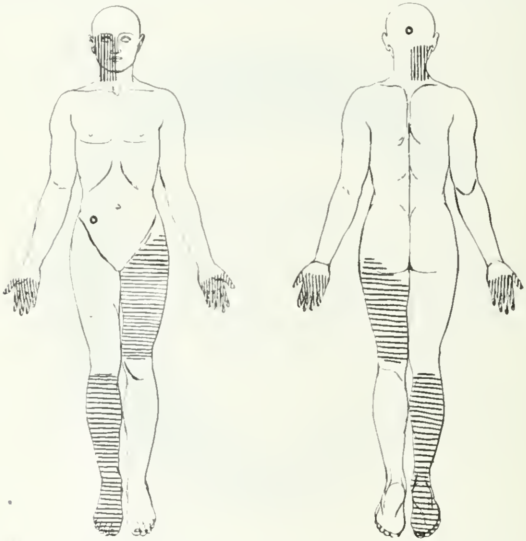


At intervals the patient would have paroxysms of intense pain during all these days, but at no time was the cornea injured in the least, and the earlier conjunctival injection was gradually subsiding. I had seen only a portion of the glass which had been removed at home and was quite unable to explain its origin.

On Friday morning five more pieces were removed from the inner edge of the lower lid at home, and I found three pieces, these being the only ones I removed during the four days she had been under my observation.

I told the nurse privately that the girl was putting the glass into her eye, and reported the same to the superintendent by telephone. The nurse was instructed to examine the eye that night at bedtime, when the patient was undressed, and to remove her from her own room to another and lock her in for the night. The patient was told that she would not need a bandage over the eye going home and that she would not be troubled by any more glass.

The following morning I had a telephone message from the nurse, saying there was no more glass to be found. Altogether forty-two pieces had been removed. I learned afterward that this patient had been quite opposed to any work she had been called upon to do from the time she was sent to the Refuge by the Juvenile Court. She would occasionally faint or have "heart attacks," as she called them, in order to be made the object of attention. When she broke her lens it probably occurred to her that an injury resulting from the accident might be as good a method of attracting attention as the "faints," and something of a change. In this she was perfectly right. With the fragments of glass in her eye she was looked upon as a great sufferer. The superintendent had fruits and all sorts of delicacies sent to her and had every attention shown her.



‖ Area of hypalgesia. ═ Area of hyperalgesia. Point of tenderness.

I particularly mention the date the patient was sent to me, December 17, as it, too, may have been a factor in the case because she probably enjoyed the trips to my office, as the downtown streets were crowded at that season and the shop windows were attractively filled with Christmas displays.

The patient's vision is 3/50 in each eye and she wears — 8 D. lenses, with which she gets the very fair vision of 6/10.

A glance at the perimeter charts herewith presented shows that the red field overlaps the blue on another occasion and the red and green fields were interchanged on another day, demonstrating an inversion of the color fields, and a marked variability in the fields of vision.

For a more detailed examination of the patient's nervous condition I referred her to Dr. Julius Grinker, whose findings were substantially as follows: The patient is of medium size, well nourished and presents no signs of organic disease. She has been a nervous girl all her life. The examination was naturally directed toward hysteria, and she was found to present a typical case of that affection. The patient has had characteristic hysterical attacks, beginning usually with a fluttering in the region of the heart, and peculiar sensations about the throat which would conclude with throbbing pains in the head. In addition, there were occasional convulsive attacks, consisting of a state of tonic rigidity, not accompanied by loss of consciousness. Nervous tremblings, so-called "nervous chills," brought on by emotional causes, have been quite frequent with the patient. A search for hysterical stigmata revealed a distinct degree of hypalgesia, affecting the whole right half of the neck and face below the eyebrows, beginning exactly in the median line anteriorly. In addition, the right lower extremity below the knee was hypersensitive to pin pricks, while the left lower extremity showed a marked degree of hypalgesia above the knee, both anteriorly and posteriorly. A relative degree of analgesia was noted in both hands, stopping two fingers' breadth below the wrist, and involving both palms and dorsum. A hyperesthetic zone was easily located in the right iliac region, the so-called *"ovarie"* of French authorities. Another point of tenderness was found over the occipital lobe, about the size of a half dollar. The reflexes were all moderately exaggerated, except the faucial, which was abolished. The corneal reflex was normal, but the conjunctival was somewhat retarded.

From the absence of symptoms denoting organic disease and the presence of the stigmata characteristic of hysteria, the diagnosis is placed beyond a doubt.

100 State Street.

COLOBOMA OF THE LID, WITH ANOMALOUS CONDITION OF THE TISSUES AT THE OUTER COMMISURES.*

WILLIAM CAMPBELL POSEY, M.D.
PHILADELPHIA.

(Illustrated.)

A few weeks ago B. S., a girl of 10 years of age, was brought to me for the correction of a deformity in the upper lid of the left eye, which had existed from birth. The child was otherwise healthy and there was no history of a similar deformity or anomalous cleft in other structures in other members of the family or ancestry. Examination showed, as is well illustrated by Figure 1, a typical coloboma of the upper lid of the left eye, which was so formed that when the eyes were directed straight forward, the cornea fitted exactly into the aperture in the lid, the outline of the coloboma being rounded in precise conformity with the corneal limbus. Just above the coloboma there was a small yellowish thickening in the skin, the size of a split pea of small size, which resembled a small xanthelasma. The cornea was clear. At the outer angle of the eye, as is imperfectly demonstrated in Figure 2, there was a marked thickening in the tissues which seemed to be dependent upon some anomalous formation in the capsule at the outer angle of the eye and the reflection of the fascia to the rim of the orbit. The bulbar conjunctiva covered this mass, which was grayish-white in color and everywhere smooth and flat. When the eye was rotated inward and the lids separated, the anomalous formation assumed a cylindrical sausage-like form, and was readily movable over the globe. Externally the mass was lost in the tissues at the commissure, but internally it was bound down to the globe by a sharp line of demarcation. A much smaller but somewhat similar mass was present in the outer commissure of the right eye. Though otherwise normal, the ocular movements of both eyes appeared to be restricted externally, but this could not be definitely ascertained, as the child was nervous and was seen but once. Both eyes were quite hypermetropic (3 D.), vision equaling 5/10 in each.

When colobomata occur in the lid, which is of but rare occurrence, as, according to Stephenson (*Ophthalmoscope,* January, 1907), only about 125 cases are found in the literature, they are usually unilateral, and occur upon the upper lid near the median portion, generally somewhat to the nasal side. Both lids, however, may be affected, and in rare instances the lower lids as well. As in the case which has just been reported, the fissure is generally triangular in form, with its base at the edge of the lid, and in most cases its edges are rounded, the angles being sharply delineated but rarely. As a rule, the entire thickness of the lid is concerned; in some instances, however, the cartilage alone is absent, while in others there is but a slight indentation in the lid margin. While in most instances the space left between the pillars of the coloboma is free, in others bands of embryonal cutaneous tissue traverse the gap, and, as in the classic case of Nuel's, this band may be attached to the cornea, giving rise to a peculiar kind of symblepharon, as in were, which may cause marked restriction in the movements of the globe. According to Hippel (Graefe-Saemisch) (Lieferung 18 and 19, p. 104), Meibomian glands and cilia are absent in the area of the coloboma, though the latter in many instances are often very plentiful at the angles. Dermoid cysts are found not unusually in the region of the coloboma, and other congenital malformations in association are the rule, such as corneal opacities and persistent pupillary membranes. Breaks in the continuity of the hair of the eyebrow have been observed, under which circumstances a wedge-shaped strip of hair frequently grows downward from the brow.

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* Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, February, 1907.

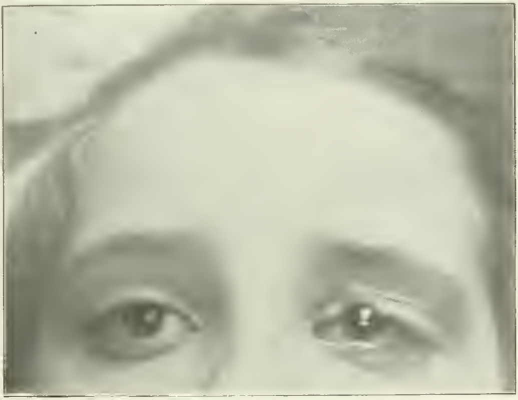

Fig. 1. Coloboma of lid, showing defect in upper lid corresponding in size and position to the upper half of the cornea when the eyes are directed straight ahead.

Coloboma of the lid is generally recognized to depend upon the improper closure of the oblique facial fissure, as a consequence of amniotic adhesions and bands, and is frequently observed in conjunction with exencephalus, anencephalus and other gross congenital malformations.

The chief interest to the writer in the case which he has reported lies in its correction, for it is the purpose of the parents to submit the child to operation. The exposure of the cornea in these cases is not without danger to the integrity of the eye, for Stephenson (loc. cit.) mentions a very similar case which was the seat of a perforated ulcer of the cornea. To properly cover the gap, it is obvious that a mere denudation and approximation of the edges of the coloboma, in a manner similar to that practiced in the operation for harelip, would not be effective, for the conditions in the lid are quite different from those which obtain in the lip. The cartilage and the eyeball are important factors to be dealt with, their rigidity and inelasticity tending to separate the flaps of the wound. The writer proposes, therefore, to first separate the skin at the edges of the coloboma from its sublying tissues, and then to perform an external canthoplasty, to lengthen the fissure and relieve the tension upon the lid. The lid will then be everted and the cartilaginous edges of the coloboma carefully approximated by fine sutures. After this has been accomplished, the lid will be gently restored to its normal position, and the line of division between the cartilages covered by two flaps which will be obtained from the lid, as is shown in Figure 3. It is hoped that this double

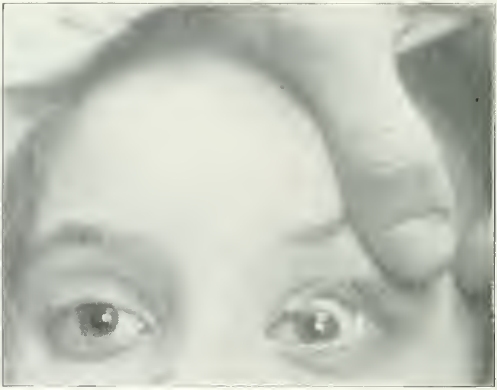

Fig. 2.—Coloboma of lid. Lid raised showing curious ectasia of tissue at external commissure.

flap will have the tendency to obviate the indentation of the lid, which may tend to form in the cicatrizing process and will foster the rapid and firm healing of the sublying wound. Later, after the cicatrization of the wound has been accomplished, and the lid has stretched and molded itself to the eyeball, if necessary, the lengthening of the external commissure can be readjusted by a slight operation.

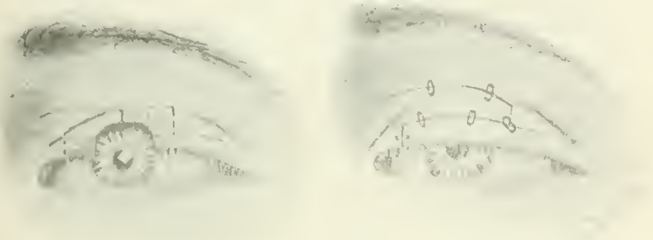

Figure 3.

In closing, reference must be made to the curious anomaly observed in the tissues at the outer canthus. A rather cursory search through the literature of congenital anomalies has failed to reveal any similar cases, though the writer some years ago encountered an analogous condition in the eyes of a boy who presented no other abnormality about the eyes. A sketch (Fig. 4) which was made of the condition in the eye in which it was most pronounced shows what seems to be a saccular dilatation in the capsule and fascia which go to form the external check ligament.

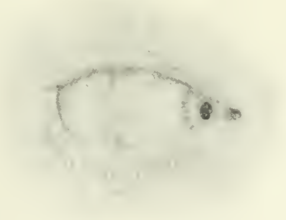

Fig. 4.—Sketch of boy's eye showing cylindrical ectasia of tissue at external commissure when eye is rotated inward.

The father of the first case which has been reported thought that the swelling, as he called it, which occurred in the eye unaffected with the coloboma, was much more pronounced in the first few years of life, having gradually lessened from year to year. In both cases the deformity occasioned by the ectasia was slight, and no procedure for its betterment seemed necessitated.

DISCISSION OF THE LENS FOR THE CORRECTION OF HIGH MYOPIA.

S. P., a Hebrew girl, aged 16 years, came to my service at the Wills Eye Hospital in August, 1906, for the improvement of her vision, which, she said, had been poor since early childhood. Both eyes were found to be highly myopic, the fundi being best seen with about — 18 D. There were broad staphylomatous areas at the outer border of each nerve, but the macular regions were fairly healthy, despite some disturbance of the pigment in that region. The media were clear. No scotomata could be outlined in the visual field. Uncorrected vision equaled 1/60 in the right eye and 2/60 in the left. Corrected vision, S. 18 D. in each eye, equaled 6/60 in the right and 6/22 in the left eye.

The right lens was cautiously needled upon three occasions without producing undue reaction. Absorption of the lens mass was comparatively rapid, so that five months after the primary discission vision in the operated eye equaled 6/24 without a glass and with — S. 2.75 D. it was brought to 6/9. Type 0.75 D. was read without difficulty at 13 inches. A similar operation has been advised upon the fellow-eye.

The subject of removal of the lens in high myopia has been reviewed so recently before the Section by Dr. Hansell (February, 1906) that it is unnecessary to dwell upon the indications for its performance or the present attitude of the profession toward it. It may not be without interest to the Section, however, to refer briefly to some of the after-effects which the operation has upon the eye. As is well known, it has been claimed by the most ardent advocates of this operation, as suggested upon *a priori* grounds by Donders, that the removal of the lens, by the consequent abolition of accommodation and relief of the chorioidal stretching, tends to check the progress of degenerative changes in the fundi and to prevent the occurrence of detachment of the retina. Fuchs, Haab and others, however, claim that such is not the case and that the degenerative processes still go on, and there are not a few who believe that detachment of the retina is rather favored by the operation. Recent statistics tend to support these latter views. Thus Huber, who bases his observations (*Beitrage zur Augenheilkunde,* lxiv, September, 1905) upon 100 eyes upon which Haab had operated for high myopia, has shown that the operation does not act as a check against the development and the progress of the disease, for he found that macular changes developed in 14.67 per cent. of the operated and only in 7.02 per cent. of the unoperated eyes, although the vision was thereby impaired only in a minority of cases. Opacities in the vitreous, retinal hemorrhages and retinal detachment all showed a similar tendency to renewed frequency after the operation. In view of these observations, Huber concludes that it is quite as essential that patients should be warned against the too continued use of their eyes after operation as well as before it.

Font-Reaulx (*Annales d'Oculistique*, February, 1906), in a very comprehensive paper in which he reviews the entire subject of removal of the lens in high myopia, also discredits, in a measure, the value of the operation, pointing out the dangers and its inefficiency in checking the increase in myopia.

Despite these pessimistic views, the writer believes that the operation should be performed in selected cases, and is of the opinion that if the discission be performed cautiously and not too extensively the danger is not as great as many would have us believe.

ULCERATION OF THE CORNEA FROM THE DIPLO-BACILLUS OF MORAX-AXENFELD.

HANFORD MCKEE, B.A., M.D.
Assistant Surgeon to the Eye and Ear Department of the Montreal General Hospital.
MONTREAL, CANADA.

Diseases of the cornea form one of the most important chapters in ophthalmology, and ulcerations of the cornea one of the most important parts of diseases of the cornea. Infection of corneal tissue may be either exogenous or endogenous, but probably in all ulcerative processes pathogenic organisms play an important rôle. The organisms which have been most responsible for destructive processes in the cornea are the gonococcus, pneumococcus, streptococcus, zur Nedden's bacillus, bacilus pyocyaneus, bacillus ozena. The destructive ability of these organisms when once allowed access to an abraded cornea is only too well known.

Of late a new factor in ulcerative processes has appeared. One of the best known diseases of the conjunctival sac to-day is diplobacillary conjunctivitis. It is now known that a very important complication of this disease may be ulceration of the cornea.

From the first writings on diplobacillary conjunctivitis it has been admitted that a complication very liable to occur was ulceration of the cornea; the ulceration, however, was always of the superficial type, generally at the corneo-sclerotic margin and the proportion of cases was small. That the diplobacillus might be responsible for ulcers of the cornea as severe in type as the ulcus serpens from pneumococcus infection has not until of late been recognized.

In 1897 zur Nedden described 23 cases of ulceration of the cornea complicating diplobacillary conjunctivitis. In the same year Uhthoff and Axenfeld described a case, and Peters saw five cases where diplobacilli were found. In 1898 Gifford reported a case of hypopion keratitis with the same etiologic factor. In 1899 Sweet described two cases complicated by ulceration of the cornea. In 1900 Petit described three cases of severe hypopion keratitis where the diplobacillus was the etiologic factor; also Hoffman, Pflüger, Biette have reported cases. In 1902 Schmidt described his findings among 193 cases of conjunctivitis. Among these he saw four cases of deep ulceration of the cornea and from two cases of ulcus serpens he isolated both pneumococci and diplobacilli; also in six cases of more or less variance in severity he found only the diplobacilli.

Paul, in the Breslau clinic, had an opportunity of seeing a large number of cases of diplobacillary conjunctivitis. Among these cases he examined twenty-six cases of ulceration of the cornea set up by the diplobacillus. This work was important because, while some of his cases were of the ordinary superficial type, others were so similar clinically to the ulcus serpens from pneumococcus infection that only the bacteriological examination differentiated them.

Later Erdmann, from the Rostock clinic, reported thirty cases of diplobacillary conjunctivitis complicated by ulceration of the cornea. Among his cases, too, was seen the form resembling ulcus serpens.

In January, 1906, Hanford McKee, before the Montreal Medico-Chirurgical Society, exhibited a case of ulcus serpens from diplobacillary infection. Only this past January has Agricola, from the Freiburg clinic, reported a series of cases of ulceration of the cornea from the diplobacillus.

In the last hundred cases of diplobacillary conjunctivitis seen here I have seen seven cases of ulceration of the cornea complicating the conjunctival disease. These cases show so well the different qualities of ulceration of the cornea by the diplobacillus that I shall describe some of them.

Case 1.—On July 2, 1905, an elderly man entered the Montreal General Hospital complaining that six days previously he had struck his eye with a twig of a tree, but at the time had paid no attention to it. The day following his eye was painful, so he consulted a local physician, who treated him for five days and then sent him to Montreal. His condition upon entry was as follows:

Right Eye.—Central third of the cornea deeply ulcerated, edges infiltrated; the only part of the cornea clear is a small area above. The anterior chamber is about half full of pus, iris dull, pupil dilated, conjunctival sac shows profuse grayish discharge. The ulcer so resembled the serpiginous type due to pneumococcus that the usual treatment of cauterizing and the application of antiseptics was proceeded with. Despite this treatment the ulcer continued to spread. Twenty-four hours later I saw this case and made a bacteriological examination; diplobacilli in hundreds were found from the prepared slide from the surface of the ulcer, while the conjunctival sac provided cocci which were shown to be *Staphylococcus pyogenes aureus.* That day he was put on instillations of zinc sulphate, the eye quieted down and the ulceration healed rapidly.

Case 2.—G. H. B., aged 50 years, a teamster, came to the Outpatient Department of the Montreal General Hospital Jan. 17, 1906, and complained that for two weeks his left eye had been "sore" and that during the last two days the eye had been swollen and very painful. No history here of trauma, no sign of tear sac trouble. The condition of the left eye was as follows: Marked blepharo-conjunctivitis, edema of the bulbar conjunctiva: the surface of the cornea over its central third showed deep ulceration with a large hypopion, iris was dull, severe chemosis, pupil contracted, vision = Pl., T. = N. The patient had had "sore" eyes all his life; the edges of his lids were always red, and his eyes generally watery. A smear was made from the surface of the ulcer and from the conjunctival sac, and tubes of serum and agar were inoculated. From the surface of the ulcer diplobacilli were found and were the only organisms seen. From the conjunctival sac the diplobacilli were found associated with the bacillus xerosis and the *Staphylococcus pyogenes albus.* The eye was immediately irrigated with a solution of the sulphate of zinc, one grain to the ounce. Drops of scopolamin H. Br. were instilled and the patient sent to the ward. The treatment he received there was rest in bed, instillation of sulphate of zinc, ¼ gr. to the ounce, scopolamin H. Br. and frequent irrigations of the conjunctival sac with warm boracic solution. The patient made rapid progress. The chemosis disappeared, the ulceration healed and the patient left the hospital with a very useful eye. Vision equal to 2/3 normal.

Case 3.—Adult female referred to me in February last. The history was that she had a foreign body removed from the left cornea three days previously, but her eye was still "sore and painful." The condition of the left eye was as follows: In the lower outer quadrant of the left cornea was seen a small round ulcer; the cornea about ulcer was infiltrated, the iris was dull, pus in the anterior chamber covered the lower third of the iris. Photophobia was marked and the pain severe. With a keratome I removed a small portion of the pus from the surface of the ulcer and examined it. Diplobacilli were everywhere seen; diplobacilli were also obtained from each conjunctival sac. The eye was immediately irrigated with a solution of zinc, ¼ gr. to the ounce. Twenty-four hours later there was marked improvement, the eye was much quieter, pain and photophobia less. The eye continued to improve, and at the end of a week the ulcer was completely healed and the eye well. Vision equal N. The patient was cautioned to continue with the drops for at least three weeks.

Case 4.—A girl of 7 years with diplobacillary conjunctivitis. In the center of the right cornea was seen a small ulcer, photophobia marked. Patient was put on instillations of zinc and within a week the corneal condition had completely cleared up.

Cases 5, 6 and 7 were very similar, all adults, laborers, each had a diplobacillary conjunctivitis and had been struck on the cornea with a foreign substance. Ulceration of the cornea followed, but in each case the ulcers cleared up quickly under zinc sulphate.

In all these cases the same technique was followed. First the ulcerated surface was stained with solution of fluorescin, then with a keratome some of the pus from the surface of the ulcer was removed, tubes of serum and agar were inoculated and smear preparations were made. In all these cases the factor was the diplobacillus of Morax-Axenfeld. These cases offer many points of interest. Cases 1 and 2 were severe serpiginous ulcers of the cornea. Case 1 did not improve even after the cornea had been cauterized and antiseptics used, and only after the instillation of a weak solution of the sulphate of zinc did the eye show any sign of improvement. Case 2 was a splendid result obtained by very simple treatment.

Cases 3, 5, 6 and 7 show what diplobacilli, and probably many other organisms as well, will do if allowed entrance into the corneal tissue.

Case 4 is of interest because diplobacillary conjunctivitis is not common among children, and ulceration of the cornea less so. These cases were all treated by instillation of drops of the sulphate of zinc, ¼ gr. to the ounce, four or five times daily; between times the surface of the cornea and the conjunctival sac were flushed with warm boracic solution and the solution of the sulphate of zinc. At night a little bland ointment, generally boracic ointment, x gr. to the ounce, was smeared along the edges of the lids. When necessary to dilate the pupil a solution of scopolamin H. Br. was used.

The "zinc therapy" differs in degree in different clinics. Agricola, in his recent paper, describes the routine zinc therapy in Axenfeld's clinic. To instil ten times daily and oftener one-half per cent. zinc sulphate solution freely into the lower conjunctival sac and over the surface of the cornea for one-half to one minute, then five times daily for twenty minutes' irrigation with a 3 $^0/_{00}$ solution. Between times and for the night 15 per cent. zinc ichthyol ointment (Peters) on the conjunctival sac and on the lids, also for the severe cases mydriatics and subconjunctival injections. With this treatment the eye generally after 36-48 hours, often after 24 hours, showed marked improvement. In none of his cases, and the majority belonged to the severe type, had zinc therapy failed. I have never found it necessary to push the use of zinc to this extent, and believe the instillation of drops of a weaker solution than one-half per cent. is desirable, not only in ulcerative conditions of the cornea, but in conjunctivitis cases as well. My experience has been that one-half per cent. solution of zinc sulphate is too painful.

The zinc therapy may vary in different clinics, but the value of the sulphate of zinc as a therapeutic measure in diplobacillary infections can not be gainsaid.

The widening of bacteriologic methods in ophthalmology and its practical value is in no better way shown than by a study of ulcerative conditions of the cornea. It is essential, especially among adult patients, to treat energetically from the very beginning ulcerative processes of the cornea. The speed with which ulcers of the serpiginous type develop is well known; whether the organism present be pneumococcus, streptococcus or diplobacillus, destruction of corneal tissue takes place all too soon. But of inestimable value as regards treatment and as regards prognosis is it to find out at the beginning what organism you have to deal with so you may act accordingly. Much stress has been put on the minute descriptions of these ulcers. It seems to me of no great importance whether one side of your ulcer is progressing (pneumococcus) or whether the whole border of your ulcerated surface has a yellowish appearance (streptococcus), and certainly of less importance whether your ulcer is square, round, oblong or crescent-shaped. Ulcers of the cornea of the serpiginous type may be set up by either the pneumococcus, streptococcus or diplobacillus; clinically the ulcers may present identically the same picture, but in the light of our present knowledge, if we wish to treat and prognose with some degree of intelligence, how important it is to find out which of these or what other factor we may have to deal with.

The advantage of knowing whether you are dealing with the pneumococcus or the diplobacillus is easily understood. The therapeutic measures necessary to overcome either are very different from those necessary in the other. In pneumococcus infection, especially of the corea, we have an exceedingly virulent organism to deal with. In diplobacillary infection, either of the conjunctival sac or the cornea, we have a specific in the sulphate of zinc.

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REPORT OF A CASE OF CYCLITIS WITH RADICAL CHANGE IN THE REFRACTION.

Calvin R. Elwood, M.D.
MENOMINEE, MICH.

It is a matter of frequent observation that the refraction increases during cyclitis and gradually returns to its former condition after recovery, an interesting phenomenon which Schapringer[1] suggests is due to increase of the refractive index of the aqueous humor, while Oliver[2] has shown it depends on spasm of the ciliary muscles.

Dr. Risley[3] has reported an hyperopic astigmatism of 1.50 D., changing to an hyperopia of 1.50 D. after five years, the first refraction having been taken immediately after recovery from an attack of retinochorioiditis. Also another case in which hyperopic astigmatism increased over one diopter with changed axes during a period of years; but the ophthalmic literature at my disposal records no such marked variation in astigmatism during the progress of an attack of cyclitis as the case I wish to report.

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[1] N. Y. Medical Journal, Oct. 21, 1894.
[2] Norris and Oliver System, p. 265.
[3] Ophthalmic Record, vol. xii.

Mrs. J., who had always had exceptionally strong eyes, first consulted me April 16, 1906, for relief from asthenopia of recent development. Retinoscopy indicated the following correction: O. D. + .50 D. S.; O. S. — .25 D. S. ○ — 1 D. C., axis 90, the test lenses O. D. + .25 D. S. = 20/15, O. S. — .25 D. S. ○ — 1.25, axis 105 = 20/20. There were minute deposits on the posterior surface of the left cornea, but no other evidences of beginning cyclitis that I could discover. I urged the patient to remain for treatment, but she declined, with a promise to return in one week.

Ten days later she returned. The left eye presented the typical picture of cyclitis and corneal deposits were so extensive that examination of the fundus was impossible, V. = F. P. The conditions present with the etiologic history indicated the following vigorous treatment: Hot boric acid compresses, atropin to complete mydriasis, dionin, potass. iodid in gradually increased doses to gr. 50 t. i. d. Mercurial inunctions dr. 1 B. i. d., and pilocarpin sweats every second day. Occasionally this rather heroic treatment had to be varied somewhat, as the patient was not strong. Gluteal injections of hydrarg biniodidi, advised by Darier, were also employed three or four times during the course of the disease.

May 12.—Little change in O. S. There are numerous deposits on the posterior surface of the right cornea.

May 31.—O. D. — 1.50 D. C., axis 90, V. = 20/30. O. S. — 1.50 D. C., axis 100, V. = 20/30; not confirmed by skiascopy. Gradual improvement in both eyes. The disease was never so severe in the right.

During my absence from the city the patient suffered a relapse, during which she was treated by Dr. Thomas C. Phillips, of Milwaukee, and was referred back to me June 14, with a report of treatment given and the following statement of the refraction: O. D. — 2.50 D. C., axis 75, V. = 6/12. O. S. — 2.50 D.C., axis 90 = 6/18.

August 22.—Patient is now practically well; there are no serious fundus changes, but some deposits on Descemet's membrane are still present, which will probably be permanent. The following is the refraction to-day, is confirmed by skiascopy and gives normal vision: O. D. + 1.25 D. C., axis 165, V. = 20/20. O. S. + 1.25 D. C., axis 165, V. = 20/20.

The above is given in amber lenses and all ocular treatment is discontinued.

Oceober 22.—As patient complains of slight discomfort, a better result is obtained by reducing each cylinder ¼ diopter, which is done without a mydriatic or skiascopy. Since the above note the last glasses have been worn with comfort, there is no asthenopia and patient uses her eyes freely.

The change in the curvature of the cornea to this extent seemed so remarkable to me that I would have hardly had the temerity to report it had not my findings been confirmed by skiascopy and in part by a confrère of recognized standing.

The refraction during the progress of the disease may not have been exact, but the first, and that of August 22, were very carefully done and I believe represented the refractive error.

There can be no question about the diagnosis of cyclitis in this case. The deposits on Descemet's membrane were typical, there were the characteristic tender points in the ciliary region and there was deep ciliary congestion. If the chorioid was involved in the inflammatory process I did not recognize it, possibly because I first examined the eye when the process was just beginning, and the next time I saw it clear view of the fundus was impossible. The field for forms is contracted slightly, which might be the result of a peripheral chorioditis.

Patient is now using her eyes freely and rejects any change in the axis of the cylinders, and re-examination a few weeks ago confirmed the above result.

REPORT OF A CASE OF PERSISTENT HYALOID ARTERY AND CANAL OF CLOQUET.*

Frederick Krauss, M.D.

PHILADELPHIA.

(Illustrated.)

The infrequency of a persistent hyaloid artery and canal of Cloquet will, I hope, form a sufficient apology for presenting this patient to the Fellows of this Section.

This patient, now 41 years old, colored woman, was first examined by me eight years ago at St. Christopher's Hospital for Children, where she was employed as a laundress.

She complained of a dark object floating before her eyes, which she had noticed for three weeks, never previously. She also had symptoms of accommodative weakness, associated with headache and ocular pain.

The vision was normal in both eyes. The pupils and irides, as well as the eye-ground of the right eye, were normal. The left eye showed the cornea and lens apparently clear, the disc slightly oval, the nasal edge being hazy. The lymph sheath of the inferior branch of the retinal vein is very broad and full. Running out from the nasal edge of the disc is a broadening mass of connective tissue, the center of which is translucent, veil-like. The lower edge has a small, blood-bearing artery running along its surface for a distance of about 1½ disc diameter, a branch of the inferior branch of the retinal artery; the growth also contains a small blood-bearing vein emptying into the inferior branch of the retinal vein.

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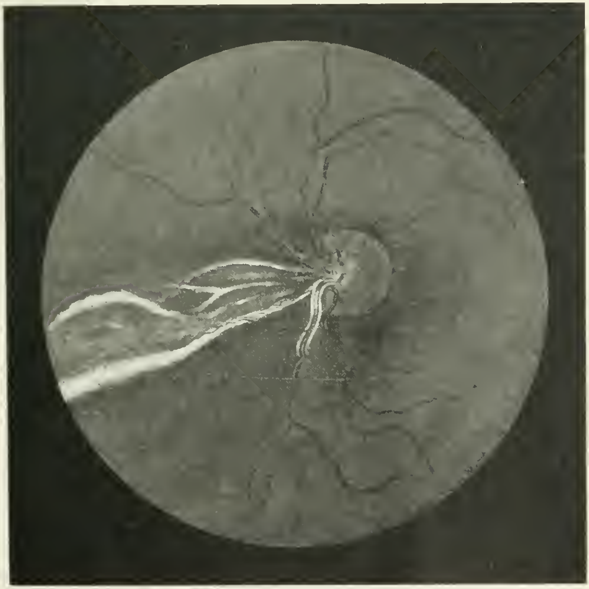
* Read before the Section on Ophthalmology, College of Physicians, Philadelphia, March 19, 1907.



Persistent Hyaloid.

This mass of veil-like tissue runs forward through the vitreous, becoming broader as the extreme nasal edge of the lens is reached. Floating freely in the vitreous is a smaller veil-like structure attached to the center of this growth.

This appearance is very much the same now, excepting that there seems to be more movement in this last-named free portion.

930 North Franklin Street.

NOTES ILLUSTRATING THE PROGRESS OF A RETINITIS OF PRESUMABLE RHEUMATIC ORIGIN.*

J. A. Patterson, M.D.

COLORADO SPRINGS, COLO.

(Illustrated.)

A married woman, aged 53, was seen in February, 1903. She complained of glimmerings, circles and annoying stellate radiations of light about the street arc lamps. She began wearing glasses at 30 years of age. She has borne eight children, five of whom are living, three having died at the respective ages of 3 weeks, 9 months and 11 years. There have been no miscarriages. Her climacteric was completed in her fiftieth year. O. D. V. = 5/lx with correction + 2.25 ⊂ + 0.75 cyl. ax. 180° 5/iv. O. S. V. = 5/lx with correction + 2.25 ⊂ + 0.50 cyl. ax. 180° 5/iv. She has had no serious illness until on Feb. 15, 1902, she had severe joint rheumatism with fever, confining her to bed for three weeks. She then lost thirty pounds in body weight. This attack began in the left ankle, involving in succession the left knee, right knee, right hip and right ankle. The first joint involved remaining troublesome on March 20, she went to Hot Springs, Ark., requiring crutches. She

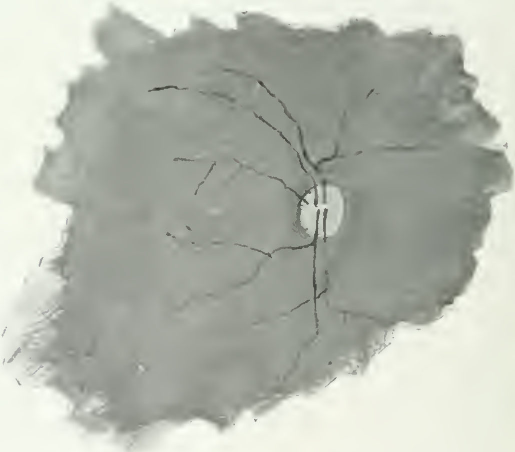


Fig. 1.—Right eye.

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* Case presented before the Colorado Ophthalmological Society, December, 1906.

now has some discomfort at times in these joints, but is free from lameness. The index finger and second digit of the right hand show arthritic deposits.

EYEGROUND.

O. D. nerve round to slightly oval, longer axis 75° ; porus opticus as a slit at angle 15° ; chorioidal ring temporal, scleral ring to nasal side. Nerve and retina in health, except at macular center, and up and down from it it is filled with small ovoid and circular areas of alteration of the pigment layer, these areas being denoted by their tint, being a few shades paler than the surrounding retinal color. There is no pigment deposit, but there is a deeper shade of color of the retina between the isolated spots than elsewhere in the retina. The fovea is with difficulty located. Media clear, T. N., remaining so under euphthalmin and cocain. The retinal vessels are normal.

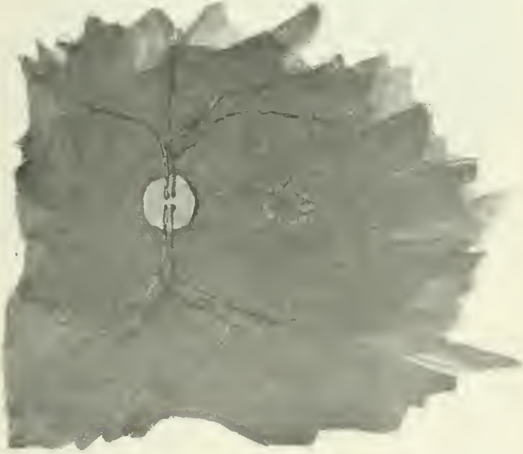

Fig. 2.—Left eye.

O. S. nerve small, vertical, oval chorioidal ring to the temporal and scleral ring to the nasal side. No porus opticus. Macula is as described for O. D., except that the spots are arranged in a circle around the fovea. These spots are under the retinal arteries, in the right eye being seen to be more in evidence under and around the smaller arterial twigs. In the left eye this tendency to hug the vessels is not found. The spots are of smaller diameter the farther away from fovea they are located.

The glimmerings were increased when under the mydriatics, being noticed with both eyes, probably more pronounced in the left. The mydriatic, euphthalmin 2 per cent., remained nearly 24 hours. These glimmerings were described as two circles, one within the other, with very many fine lines as spokes radiating from the common center. There was some chromatic phenomena, the halo being blue, running into a green. The fields were full for form and colors, and the central scotomata with 2 mm. color squares could be elicited. The urine had a specific gravity of 1028. Urea, 1.6 per cent. No albumin; a few straight and convoluted hyaline casts.

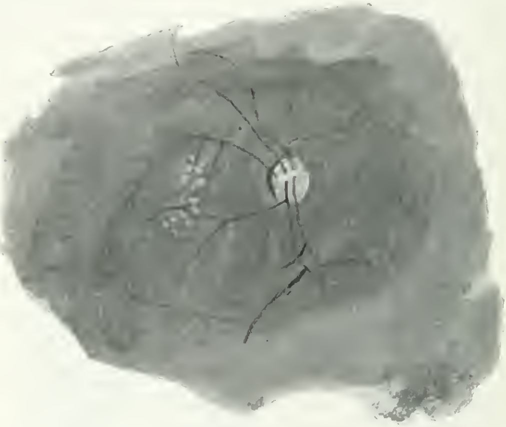

Figure 3.

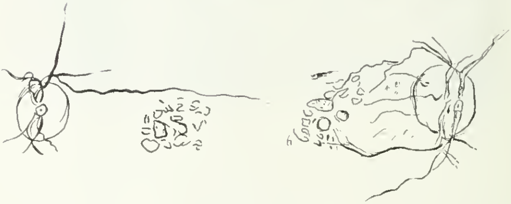

Figure 4.

Figures 1 and 2 show the condition around the macula when the patient was first seen; Figure 3 the right eye at a subsequent period, the increase being noticeable; Figure 4 is a rough pencil sketch to illustrate the increase in alteration going on, drawn about a year later, the appearances being very similar to a case of central superficial chorioiditis depicted in Frosts' Fundus Oculi, Figure 49, R. E. At the present writing these retinal conditions show a gradual increase in the number of spots, the surface area involved has extended; until recently no migration of pigment has been noted; now there is an almost microscopic dot of pigment seen along the outer border of the fovea of the left eye. The retinal appearances are gradually approaching those usually classified as senile.

The case is presented to illustrate the early eyeground changes found. The distinct tendency in this case for the first changes, particularly in the right eye, to be in intimate relation to the retinal vessel trunks, may be of some pathologic significance. This patient's vision still remains 5 v with her correction, which has now changed to + 2.50 $\bigcirc$ + 1.00 cyl. ax. 180 in each eye, the test letters being read with greater promptness with the right eye. Fields remain full for form. Blood pressure 135. Although a few tube casts were found in the urine three years ago, the patient has shown no other evidences of having nephritis, her health remaining as good as usual. Her eyes fatigue quickly at close work.

STAINING FROM ARGYROL EMPLOYED IN DISEASES OF THE CONJUNCTIVA AND LACRIMAL APPARATUS.

H. Moulton, M.D.

FORT SMITH, ARK.

We sometimes see in print and hear in discussions the statement that argyrol will not produce argyrosis. We also now and then are advised to inject argyrol into the lacrimal sac.[1]

As to the first proposition I can report a case in confutation. In 1904 I advised Dr. A. Dunlap, an aged and retired physician, to use a 25 per cent. solution of argyrol for a conjunctivitis of his right eye, complicating a low grade of iridocyclitis. In November, 1906, I again saw the Doctor. He stated that he had continued to use the argyrol three times a day almost without interruption for nearly two years. Also that he had used nothing else, excepting occasionally some atropin drops, since I had seen him. The conjunctiva was intensely stained in the characteristic way so often seen after the prolonged use of silver nitrate. A typical case of argyrosis.

As to the second matter, the use of argyrol in the lacrimal passages, I can say that I at first did not hesitate to inject it in what seemed to be suitable cases, but the following experience early cured me of the habit:

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[1] See Ophth. Record, September, 1906, p. 445, as an example.

Nov. 8, 1903, Mrs. S., aged 46 years, came to me complaining of epiphora of the left eye. After dilating the lower punctum, I gently introduced, by means of a glass pipette, three or four drops of a 25 per cent. solution of argyrol into the canaliculus. Almost immediately there appeared, over the location of the sac, a dark stain which in a few moments spread over the cheek and even up to the brow. There was also some swelling and pain, which passed off in 24 hours. An attempt was immediately made to aspirate the solution remaining in the sac and then to decolorize with bichlorid mercury solution, 1 to 3000, injected into the canaliculus. Later iodid of potassium was administered internally for some time. The discoloration of the skin was very intense for several weeks. Then for a few months it gradually faded, since when it has remained about stationary. At the present time the staining amounts merely to an intensification of the normal dark discoloration to be seen under the patient's other eye and so nearly constantly seen under the eyes of thin elderly people of dark complexion. It also covers a larger area, extending down and out over the malar bone to the extent of nearly an inch. The skin of the upper eyelid at first stained has become of an entirely normal color. The discoloration remaining is not noticeable when viewed from a greater distance than six or eight feet.

EMBOLISM OF THE CILIORETINAL ARTERY.*

FREDERICK KRAUSS, M.D.

PHILADELPHIA.

(Illustrated.)

Miss B. M. F., aged 18 years, school girl, was first seen Feb. 6, 1907, with the history that a large black spot had suddenly appeared before the right eye two days before, for which she at that time consulted her family physician.

This spot is almost directly over the object fixed, only the upper edge of which is perceived. The spot is stationary and constant. Her eyes had been examined two years ago by an oculist and declared to be normal. At that time she had muscæ volitantes. There had been no previous eye trouble and no headaches.

Her family history is negative, except in regard to rheumatism and valvular heart disease, which were present in mother, grandfather and great grandmother.

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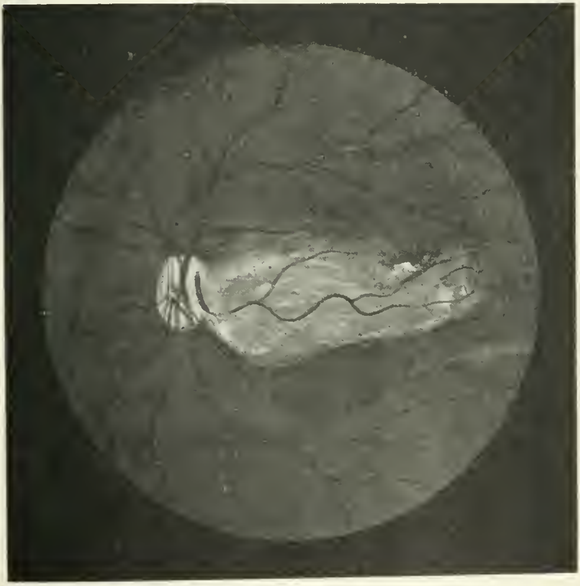
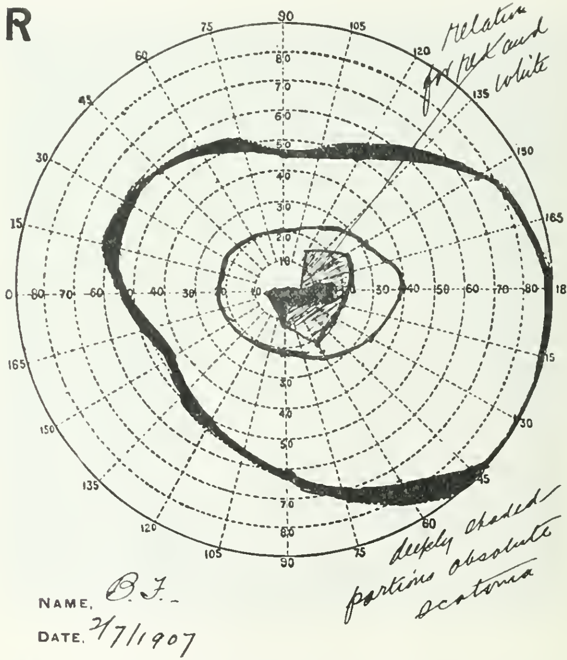
* Read before the Section on Ophthalmology, College of Physicians, Philadelphia, March 19, 1907.

Personally she had all the diseases of childhood. Scarlet fever appeared at 3 years of age, following which she had frequent attacks of tonsillitis and la grippe. Hearing was difficult at times. Closely following this, the patient had whooping cough. At the age of 6 she had acute rheumatic fever, of which she has had two lighter attacks since, the last one occurring eight years ago. At times she has had free discharge of mucus from both nostrils, for which she was treated for catarrh. Her health has otherwise been good, and she knows of no heart lesion.



B. F., March, 1907, Embolism of Cilioretinal Artery.

The pupils of each eye are 2.5 mm. in diameter and respond equally and freely to light, accommodation and convergence. The vision in her right eye is obtained by frequent movement of the head and 5/xxx of normal at times, the upper edge of the letters being the only part visible. The left eye shows V. = 5/v of normal. Ophthalmoscopically, in the right eye the pupil is vertically oval, the media are clear, the disc is vertically oval, normal in tint. There is a good-sized cilioretinal artery arising from below the center of the optic nerve head near the temporal border. The artery passes up vertically for about one-half disc diameter, making a sharp loop, then drops on retina to a point opposite the center of the disc, when it bends again sharply and runs to macular region, sending out several branches, and finally dividing into two terminal branches.



relative for red and white

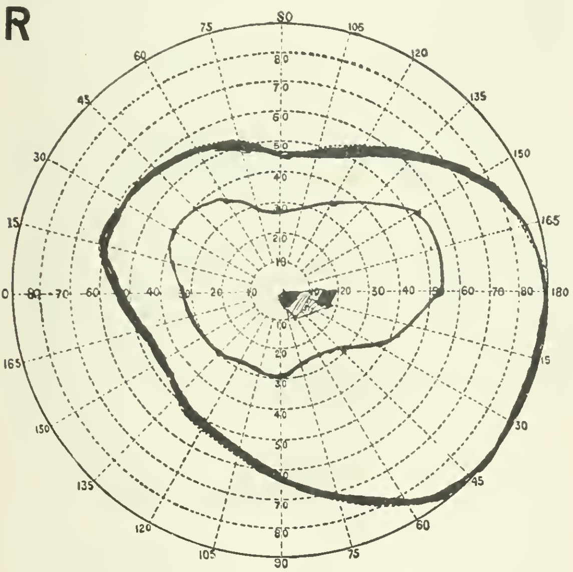
deeply shaded portions absolute scotoma

B. F.

2/7/1907

The artery is a caliber of the size of one of the larger branches of the inferior temporal artery to a point about one-half disc diameter from the disc, where it is constricted, the rest of the arteries being more narrow, lying upon an opaque area of the retina, which latter extends from the constricted portion of the cilioretinal artery where it is broadest to a point one-half disc diameter beyond the macula lutea, the upper part of which is directly involved, the lower part being cherry red in color contrast.

The part of the retina which is opaque corresponds accurately with the parts supplied by the cilioretinal artery of the eye. The upper and lower margins are festooned, and are limited above by a tortuous branch of the superior temporal artery and below by branches of the inferior temporal artery going to the macula. The upper part of the macula is apparently entirely supplied by the cilioretinal artery, while below there are several branches of the inferior temporal artery running directly into the macula.



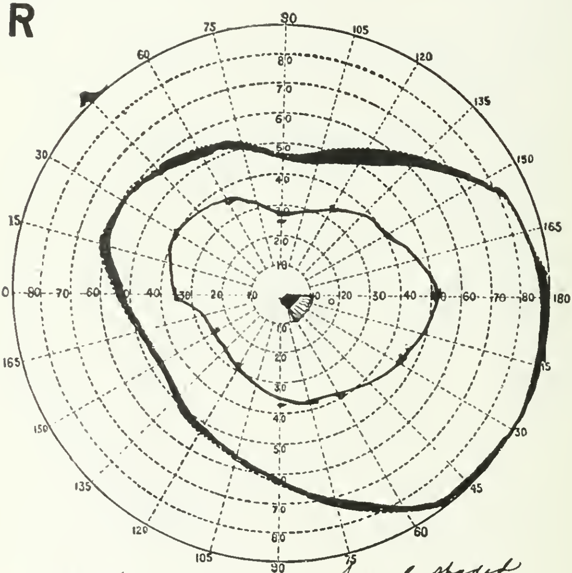
NAME. B. J.

DATE. 3. 12. 07

The portion of the retina between the disc and the obstructed cilioretinal artery was nearly normal when first seen, but two days later it became opaque and the temporal edge of the disc became veiled. The artery in advance of the obstruction gradually became smaller. The eyeground of the left eye was apparently normal.

The field of vision of the right eye shows a large section extending from the physiologic blind spot to a point of 5° to the nasal side, and it extends through an arc of 90° along a line 20° from the macula. The upper nasal sector is entirely free.

The scotoma is relative for white and red, except through a horizontal area about 5° wide extending from 5° beyond the macula to the physiologic blind spot, where it is absolute. In taking this field the patient could only see the upper edge of the fixative point.



Heavily shaded absolute scotoma

NAME. F.B.

DATE. 3/18.1907.

Six days later the scotoma was much smaller, the patient claiming that the scotoma was absolute except in center and about 5° to 10° wide and 20° long.

Twenty-three days later the scotoma was but 5° at its widest and 15° long, with only a small area of absolute scotoma at both ends. Two days ago—39 days after the accident—there was only a small section from fixation slightly down and to 10°.

Corresponding to these changes in the field, it was interesting to note how the mildness of the retina gradually became less, like a melting snowpile, the periphery first becoming transparent. The opaque area gradually assumed the appearance of a retinal reflex and finally the appearance of normal retina.

The cilioretinal artery when first seen was fairly well filled on both sides of the obstruction, but gradually became smaller, so that at the present time it is a mere thread filled with blood. The optic nerve has lost its haze.

The patient's general condition was good. A faint systolic murmur was heard at the apex. The nose examination showed the middle turbinate bones somewhat swollen and red, with some secretion from ethmoids, which rapidly subsided under treatment.

The tonsils were a mass of a scar tissue due to electrocautery frequently repeated by the general practitioner. The pharynx disclosed an enormous adenoid in the vault.

Previous to the operation with ether for the removal of this growth, the nervousness of the patient perhaps caused a tremendous augmentation of the heart murmur, and a presystolic roughness could be determined, suggesting vegetation on the mitral valve.

She made a prompt recovery, the heart murmur again being but slightly audible.

The vision in her right eye rose in five days from excentric 5/xxx to 5/xii slightly excentric. Four days later it rose to 5/vi at times, and two weeks from the onset of the trouble vision was again 5/iv.

Embolism and thrombosis of the central artery of the retina has been studied quite frequently since Graefe, in 1859, first described its appearance. Microscopic examinations have been possible in a number of instances (Manz, Elschnig and Wagenmann), and disclosed coagulations in the central retinal artery and its branches, though in the case of Hirschberg no embolus or other pathologic lesion was found. Schmidt-Rimpler believes that the obstruction must have been in the immediate vicinity of the central artery, as central obstructions of the ophthalmic artery do not cause changes in the eye.

H. Knapp, in 1868, described two cases of embolism of the cilioretinal artery, in one of which a postmortem examination was made, the patient dying of thrombosis of the cavernous sinus and jugular vein on the right side. The right eye was affected, the region between the macula and optic nerve being affected.

Microscopically, large numbers of pale, light, yellowish, semitransparent, finely stippled, homogeneous spheres or plates, the diameter of which were 1½ to 2 times the diameter of a nucleus, were found especially in the outer nuclear layers and outer molecular layers, none being found in the inner nuclear layer. These colloid masses, Knapp thinks, consist of protoplasmic cells in which the nucleus is hidden, and account for the cloudiness of the retina in embolism.

The comparative infrequency of this particular type of retinal artery embolism is, perhaps, due to the fact that the cilioretinal artery is present in only a small minority of persons, and that it is even then of small size and of minor importance.

The ciliary arteries being among the terminal branches of the ophthalmic artery, it is supposed that they are more frequently the seat of embolic processes, which are frequently overlooked, as stated by Knapp in 1868, because of the collateral circulation of the ciliary arteries and the fact that scotomata of small size, not occupying the central field, are rarely noticed by the patient when the second eye is normal.

When, therefore, a cilioretinal artery is of a large size, it is much more liable to become obstructed by an embolus than the central retinal artery. The collateral circulation which exists between the central artery of the retina and the cilioretinal artery is clearly shown in this case by the improving vision, though the cilioretinal artery has practically undergone atrophy.

Had this cilioretinal artery been a branch of the central artery the continuous improvement of vision would not have been so rapid or complete.

The treatment consisted of deep massage, nitroglycerin, gr. 1/100, internally every three hours and absolute rest of the eyes.

930 North Franklin Street.

IN THE *Medicinische Klinik,* III, 1907, Hess, of Wurzburg, Germany, claims that a large percentage of the cases of blindness in Germany, probably 50 per cent., were from avoidable causes. Vaccination, which is very strict in Germany, has reduced the blindness from smallpox to less than 1 per 1,000. In Austria, however, vaccination laws are less rigidly enforced, and from 20 per cent. to 30 per cent. of the known blindness is caused by smallpox. Hess suggests the compiling of statistics of the number of eyes lost through quack practices.

Reports of Societies.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting Feb. 19, 1907.

Dr. Howard F. Hansell, chairman, presiding.

A CASE OF ELECTRIC-LIGHT BURN OF THE EYE, WITH TRANSIENT BLINDNESS.

Dr. Burton Chance reported a case of electric-light burn of the eye, with transient blindness. The subject was a scientific experimenter, who had been studying strong lights at short distances for several hours. He had not used shades or protecting glasses. The first signs consisted of scotomas, with halos about lights and increased redness of flames known to contain red elements, while the eyes and lids felt parched. Several hours later there was sudden, intense pain, photophobia, lacrimation with swelling of the lids, and blindness. There were superficial burns of the lids, edema, and chemosis; and on the corneas were several small blisters, which later became resolved into colloid masses and were then absorbed. The retinas were edematous and the fundus tint was grayish, becoming later on a veiled orange color. The sight was not restored until the fourth day; there were no unusual peripheral visual disturbances, though the retinas were painfully sensitive to electric-arc rays. For a space of three weeks the eyes remained perfectly normal. Then, after excessive exposure, many of the symptoms returned. The color fields were contracted, though no scotomas could be detected. The treatment in the first attack consisted in rest in a darkened room and the use of hot anodyne lotions; while in the second atropin was used daily and the patient was sent to the country. After two weeks the retinas appeared healthy and the visual function was completely restored.

Dr. Hansell said he thought the burn in such a case must be very similar to that caused by the use of the *x*-rays. He had examined a case in which a growth on the conjunctiva was being treated by *x*-rays, and found a dense opacity of the cornea which had gradually spread until nearly the whole cornea was involved. Dr. Ziegler reported a case in which the injury was due not to exposure to a steady light, but to the accidental crossing of two electric wires. Ophthalmoscopic examination showed an edema of the retina.

There was marked *anesthesia retinæ*, which persisted for more than a year, and made him fear optic atrophy. Visual acuity, however, had returned, and there was complete recovery.

A CASE OF EPITHELIOMA OF THE SCLEROCORNEAL LIMBUS.

Dr. George S. Crampton reported a case of epithelioma of the sclerocorneal limbus. The growth had appeared without previous injury to the cornea, and had grown slowly until in sixteen years it had invaded about two-thirds of the surface of the cornea and a somewhat smaller extent of the conjunctiva. It was dense and very slightly raised above the eyeball, its surface being finely papular and of a pinkish ivory color.

Dr. Shumway spoke of the exceedingly slow extension of the growth and the very slight involvement of the deeper layers of the cornea, as shown by the microscopic sections. Such growths were usually to be distinguished clinically from pure papillomas by the fact that they were sessile, whereas the papillomas possessed a pedicle.

TRACHOMA, CLINICALLY AND SOCIALLY CONSIDERED.

Dr. Howard F. Hansell presented a paper on "Trachoma, Clinically and Socially Considered." He alluded to the introduction of trachoma into European countries by the returning armies of the Italian, French and English in the beginning of the eighteenth century and its subsequent widespread dissemination. Its virulence and its prevalence are not the same among all nations, but increase in direct proportion to the conditions that favor its spread and development. The contagiousness of trachoma can not be doubted. Its unsuspected admission into schools, educational and reform, into barracks and ships, into benevolent institutions, into private families, and the infection of from 50 per cent. to 75 per cent. of the inmates, are conclusive. It is admitted that the contagion is resident in the secretion and that the disease is communicated by contact of the secretion, whether fresh or dried, with an hitherto unaffected conjunctiva. Hence, those forms are most contagious that have the most abundant secretion. After trachoma has reached the third stage the secretion, characteristic of the disease, has disappeared.

The U. S. Government has included trachoma among "dangerous contagious diseases" and all immigrants are subjected to a rigid examination of their eyelids. The question arises as to the justice of the act in the exclusion of *all* trachomatous individuals. If all cases are dangerous and contagious the officials whose duty it is to carry out the law have no choice, but if it is admitted that the contagiousness is limited to the first and second stages it would seem that the law should be interpreted to apply to those stages only.

The discussion on this paper was opened by Passed Assistant Surgeon Taliaferro Clark, of the Public Health and Marine-Hospital Service (by invitation). Dr. Clark said that the cause of trachoma is still unknown, despite the immense amount of work that has been done on the subject. The organisms, whatever they be, are only conditionally contagious, as the disease does not always affect all the members of one family. He distinguished three stages: (1) an acute one, associated with trachoma bodies, the size of which differed according to their position in the conjunctiva, to the severity of the infection, and to the resisting power of the individual; (2) a connective-tissue stage, and (3) the stage of contraction. In the Marine-Hospital Service the cicatricial changes were considered of the most importance in diagnosis, and acute cases were held for a week to see if such were present after the catarrh had subsided. In the third stage he did not consider the disease was contagious, but he did not agree that in such cases there was no danger to eyesight. The pressure of the distorted lids, particularly in elderly people, and the production of pannus tissue and ulceration of the cornea were followed by blindness in 75 per cent. of the cases which were untreated. The diagnosis was more difficult among immigrants than in the ordinary hospital clinics, because of the systematic use of such applications as adrenalin and various caustics among the infected individuals, in order to improve the local conditions before starting from foreign countries, and even on shipboard. It was, therefore, often a difficult decision to make in the short time allowed.

In government work, as a result largely of a paper read by Myles Standish in 1897, the law is now mandatory that all cases of trachoma are to be deported, because of the danger of infection to others and of blindness to the individual. The certificate of the Marine-Hospital Service can not be contested by a physician, but an appeal may be taken to three physicians in the service. This ruling is necessary in order to prevent the nullifying of the decision of the government's official by a physician who may not have had proper training.

Prior to the passage of the law many thousands of infected individuals gained entrance to the country, joining centers already formed, and starting new foci of the disease. New cases are constantly appearing, probably as the result of infection during the passage, although symptoms are not evident on admission. Efforts are now being made to prevent the formation of new foci, and investigations of Dr. A. E. Davis, of New York, have shown recently that the percentage of trachoma cases in the various cities has been reduced from 4 to a little over 2 per cent, since the law was passed. The disease, therefore, may in time be eradicated from the country. Four per cent. of the blindness in the United States is due to trachoma. It has become a menace to the children in the public schools of our large cities, although the number of cases reported is believed by some to be greatly overstated, many cases of follicular catarrh having been included by mistake. Dr. Clark referred to the establishment of trachoma hospitals in New York City. In the first one founded 4,827 cases had been treated in nine months' time. There were 150 inspectors employed to examine the school children, and for nine months' time the hospital had been conducted at a cost of $27,000. Good results, however, were evident in the reduction of the number of children affected.

Dr. W. L. Pyle did not believe that a positive diagnosis of trachoma could be made in the first stage, and he was in hearty accord with Dr. Clark's conservative attitude of delaying a definite opinion until the connective-tissue bands of the second stage were clearly discernible. He did not believe that cases of trachoma in the third stage were infectious, and he thought that immigrants who could meet the financial requirements and who were vouched for by reputable American citizens might be safely admitted in the final stages of trachoma. If there was reasonable assurance that they would not become public charges in case of ensuing blindness, he did not think the rigid enforcement of the exclusion laws was justifiable. In a survey of the literature relative to the great prevalence of trachoma in the large cities of the world he was struck by the comparative infrequency of the disease in Philadelphia. In private practice true trachoma was practically unknown, and after more than ten years' experience at Wills Eye Hospital he would pronounce it a comparatively rare ophthalmic affection. Of course, in every locality many analogous cases of conjunctival disease are loosely classed with true trachoma, and this will likely account for some of the startling figures published. The term "granular lids" is generally used in common parlance to describe all forms of chronic conjunctivitis.

Dr. Clark said that cases in the third stage of trachoma were always certified as in danger of blindness.

A CASE OF KERATITIS TUBERCULOSA TREATED BY TUBERCULIN.

Dr. S. Lewis Ziegler read a report of a case of keratitis tuberculosa treated by tuberculin. The right eye was affected, the nodes being located in Descemet's membrane. In the onset the case closely resembled interstitial keratitis, the salmon-colored patch and vascularized marginal ring being present. Later, isolated tuberculous nodules appeared.

For two months tuberculin injections of 3 to 5 minims had been administered once or twice a week. There had been a local reaction twice, and a systemic one three or four times. Improvement had been slow, but steadily progressive, and the patient was now rapidly convalescing, although the central opacities in Descemet's membrane would doubtless interfere permanently with good central vision.

Dr. S. D. Risley recalled to the members of the Section a case which he had reported in October, 1905, as tuberculosis of the conjunctiva. The patient had been treated with tuberculin, and the first three injections had been followed by such sharp reaction that it was considered imprudent to repeat them more frequently than once a week. The two subsequent injections had produced only a moderate reaction. There had been a rapid improvement, not only in the local condition, but in the general health of the patient.

COLOBOMA OF THE LID, WITH ANOMALOUS CONDITION OF THE TISSUES AT THE OUTER COMMISSURE.

Dr. William Campbell Posey reported a case of coloboma of the lid, with anomalous condition of the tissues at the outer commissure, occurring in a girl aged 10 years. The child was otherwise healthy and there was no history of a similar deformity or anomalous cleft in other structures in other members of the family or ancestry. The coloboma, which was situated on the upper lid of the left eye, was so formed that when the eyes were directed straight forward the cornea fitted exactly into the aperture in the lid, the outline of the coloboma being rounded in precise conformity with the corneal limbus. The cornea was clear. At the outer angle of the eye there was a marked thickening in the tissues which seemed to be dependent upon some anomalous formation in the capsule and the reflection of the fascia to the rim of the orbit. The bulbar conjunctiva covered this mass, which was grayish white in color and everywhere smooth and flat. Externally the mass was lost in the tissues of the commissure, but internally it was bound down to the globe by a sharp line of demarcation. Dr. Posey said that up to this time but 125 cases of coloboma of the lid had been reported in the literature; that the fissure in the reported cases, as in his case, is generally triangular in form, with its base at the edge of the lid, in most cases the edges being rounded, the angles being sharply delineated but rarely. While in most instances the space left between the pillars of the coloboma is free, in others bands of embryonal cutaneous tissue traverse the gap, and, as in the classic case of Nuel, this band may be attached to the cornea, giving rise to a peculiar kind of symblepharon, which may cause marked restriction in the movements of the globe. The chief interest to the writer lay in the correction of the defect, for which he proposed to operate. He proposed to first separate the skin at the edges of the coloboma from its sublying tissues and then to perform an external canthoplasty to lengthen the fissure and relieve the tension upon the lid. After this procedure the lid will be everted and the cartilaginous edges of the wound carefully approximated by fine sutures. The line of division between the cartilages will be covered externally by two sliding flaps which will be obtained from the lid.

Dr. Posey said that he had seen the curious anomaly in the outer commissure of the eye in one other instance. He did not believe that the mass was a dermoid, but attributed it rather to a saccular dilatation of the capsule and fascia which go to form the external check ligament.

Dr. Pyle called attention to a curious case of almost total double superior ablepharia in an infant under his observation about two years ago. At this time operative interference was not deemed advisable.

HIGH MYOPIA.

Dr. Posey also reported a case of high myopia in a Hebrew girl, aged 16 years, in whom removal of the lens had been successfully performed by discission. Both eyes were myopic (— 18 D.). There were large staphylomatous areas surrounding the discs, but the vitreous was clear, and despite some disturbance of the pigment in the macular regions no scotoma could be outlined in the visual fields. The right lens was cautiously needled upon three occasions. Five months after the primary discission, vision in the operated eye equaled 6/xxiv, without a glass, and with — S. 2.75 D. it was brought to 6/ix. Type 0.75 D. was read without difficulty at thirteen inches.

Regarding the degenerative processes which many claim still continue after the lens is removed, Dr. Posey referred to the statistics of Huber, who based his observations upon one hundred eyes upon which Haab had operated for high myopia. This author found that macular changes developed in 14.67 per cent. of the operated and only in 7.02 per cent. of the unoperated eyes, although the vision was thereby impaired only in a minority of cases. Opacities in the vitreous, retinal hemorrhages, and retinal detachment all showed a similar tendency to renewed frequency after the operation. Font-Reaulx, in a very comprehensive paper, also discredits in a measure the value of the operation, pointing out the dangers and its inefficiency in checking the myopia. Despite these pessimistic views, however, Dr. Posey believed that the operation should be performed in selected cases, and was of the opinion that if the discission be performed cautiously and not too extensively the danger is not so great as many would have us believe.

Dr. S. D. Risley said that when the operation was first proposed he had expressed the opinion that the pathological conditions present in eyes with high myopia would make operative procedures dangerous, and later statistics had seemed to bear out this opinion. Retinal detachment had been especially frequent, and he, therefore, considered the operation justifiable only in selected cases, and then very cautiously, until the temper of the eye could be learned. Traumatisms to an already diseased eye are very dangerous, and the changes present in the macular region are by no means checked by operation.

Dr. Pyle remarked on the gradual change of sentiment as to the value of removal of the crystalline in high myopia.. He had never deemed the operation a sound or safe surgical procedure, and expected to see a progressive diminution in the number of such patients operated. After repeated requests from advocates of the operation for definite indications for its employment he was generally met by a list of conditions when it was positively contraindicated, and given such vague answers for its indications as "certain selected cases," etc. There was no established consensus as to when to operate.

Dr. Risley said that by selected cases he meant those in which no fundus changes were present.

Dr. Ziegler reported a case in which one eye was blind, while the other showed high myopia, with retinal detachment. Posterior sclerotomy was performed, tapping the fluid beneath the detached retina and the retina returned to its normal position. Subsequently the lens became opaque, and was operated upon by discission. The resulting vision was good.

Dr. Hansell gave the subsequent history of the case reported before the section a year ago, in which there had been repeated retinal hemorrhages. For a year after operation there had been no recurrence of the hemorrhages, and the man returned to his work. Lately, however, there had been a return of the hemorrhages. The vision had remained about 20 lxx, and the myopia had not increased. These hemorrhages had not been the result of the myopia apparently, but of the general condition of the patient. The coagulability of the blood was only one-fourth of normal, and systemic treatment to combat this had not prevented the occurrence of the hemorrhages.

Dr. Posey, in closing the discussion, said that the number of cases in which operation is advisable is probably less in this country than abroad. In his experience the majority of patients with high myopia were to be found among the Hebrews and Irish. Dr. Posey would not operate if satisfactory and comfortable vision could be obtained by glasses, and, as the correction of refractive errors was more carefully done here than on the Continent, this factor would reduce the number of cases requiring operation. He would operate, further, only in young subjects, in the presence of a myopia not less than 16 D., and only when no serious fundus changes existed. He did not consider a moderate chorioiditis a contraindication. The operation of choice was discission, the needle being introduced near the limbus, and the lens cautiously excised, so as not to disturb the zonula of Zinn.

EDWARD A. SHUMWAY, M.D., *Clerk of Section.*

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting March 11, 1907.

DR. F. C. HOTZ, President.

XANTHOMA MULTIPLEX WITH CORNEAL INVOLVEMENT.

Dr. F. A. Phillips presented a boy of 18 with a large, yellowish, broadly sessile, slightly vascular tumor seated upon the upper third of the corneo-scleral limbus of the right eye. A similar growth affecting the fellow eye had disappeared and then reappeared. Typical lesions of xanthoma multiplex of some four years' duration were scattered over the body. Nine months before the larynx had been attacked and a tracheotomy performed to relieve the obstruction. Although no part of the tumor of the eye had been removed for microscopic study, Dr. Phillips considered these lesions to be identical with those of the skin.

Dr. E. V. L. Brown suggested that the fatty nature of these tumors might make it possible to stain them black *in situ* by stripping back the conjunctiva and applying Fleming's solution.

A CASE OF COMPLETE ALBINISM.

Dr. Willis O. Nance exhibited a case of complete albinism in a girl of 5 years in whose family history, dating back to great grandparents on both paternal and maternal sides, no trace of a similar condition could be determined. The patient, born in Chicago, is one of five children, two of whom are dead; the parents and the two remaining children were exhibited before the society. They are of Irish descent and all vigorous, both physically and mentally. There is no history of intermarriage, admixture of negro blood, syphilis, or other dyscrasia. The child's eyes are perfectly normal except for the complete absence of pigment. Nystagmus is present. The refraction is hypermetropic to the extent of 4 D. Dr. Nance agrees with Gould that the albinotic eye is not in any sense a diseased one, and that heredity or consanguity figure little in its causation.

Dr. H. B. Young, Burlington, has seen three cases of albinism, one a child of 5, the second a young lady of 18, and the third a woman about 45. As in Dr. Nance's cases, the eyes were normal throughout except for the absence of pigment. When the girl of 5 grew to young womanhood the albinism was much less noticeable.

In response to a question by Dr. Guilford, Dr. Nance said that the hearing of his patient was apparently normal, although a careful examination was not made.

QUININ AMBLYOPIA.

Dr. H. W. Woodruff exhibited a patient who had been given 195 grains of quinin in four days some thirteen months ago. Total blindness of sudden onset lasted three or four days, then vision returned and in ten days he could see to get around. During the past months vision has continued to improve slightly and is now 20 lx and 20 xl respectively, although there is a marked atrophy of each nerve-head and typical concentric narrowing of the fields.

E. V. L. Brown, *Secretary.*

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

PROF. TRUC, Montpellier, France, has been made Chevalier de la Legion d'Honneur.

DR. LAWRENCE RYAN, of Galesburg, has been making a tour of the West and Southwest.

A BUST of Gayet, a celebrated ophthalmologist of France, was recently unveiled in the University of Lyons, France.

DR. COSSE, of Tours, France, one of the founders of *L'Ophthalmologie Provinciale*, has been appointed Officier d'Academie.

THE Indiana optometry bill was signed March 11 last by the Governor. One oculist was provided for on the examining board.

DR. FREDERICK J. BARRETT of Buffalo has recently been appointed special examining surgeon to the Buffalo Pension Bureau.

DR. A. REMY, of Bijon, France, won the Saintour prize offered by the Paris Academy of Medicine. His essay was upon the diploscope.

THE new detention hospital for trachoma cases which the Canadian Government has been building at Halifax is now ready for occupation.

A LEGACY of $1,000 from the estate of Mrs. Christine Maitre was recently received by the Eye, Ear, Nose and Throat Hospital of New Orleans.

LOUIS H. TOSSWILL is president of the Section of Ophthalmology of the British Medical Association, which meets at Exeter, England, July 30 to August 2, 1907.

THE Bowman Lecture of the Ophthalmological Society of the United Kingdom will be delivered June 14, 1907, in London, by Professor Sattler of Leipzig, Germany.

THE directors of the Webber Hospital Association of Biddleford, Maine, have appointed Dr. Frederick L. Davis ophthalmologist and otologist on the staff of the institution.

MR. PRIESTLY SMITH, president of the Ophthalmological Society of the United Kingdom, has been appointed an honorary fellow of the Royal College of Surgeons of Ireland.

DR. FRANK B. LORING, of Washington, D. C., has been appointed oculist to the Baltimore and Ohio Railroad at that city, to fill the vacancy created by the death of Dr. E. Oliver Belt.

A BILL to regulate the practice of optometry was introduced in the Illinois Legislature during February. It is known as House Bill No. 256, and is similar to the one killed in 1905.

DR. AND MRS. CHARLES P. SMALL, of Chicago, have engaged passage for a trip to Europe, where Dr. Small intends doing some special work in ophthalmology. They sail June 8 for Naples.

DR. W. P. BILES died at his home in Carlyle, Ill., Feb. 18, 1907, at the age of 56 years. He was formerly in general practice, but of late years he had confined his practice to the eye and ear.

DAVID MCKEOWN, surgeon to the Manchester Eye and Ear Hospital, died recently in Manchester, England, at the age of 56 years. He was particularly well known for his work on the ear.

DR. CLAUDE DU BOIS-REYMOND, Privat-Dozent for ophthalmology at the University of Berlin, has been called to teach physiology for a term of six years at the German Medical School in Shanghai, China.

One of the features of the meetings of the French Ophthalmological Society in Paris, May 6, 1907, will be the discussion of Vernal Conjunctivitis, to be opened by Prof. Axenfeld, of Freiburg, Germany.

Dr. R. G. Buckner, who recently visited the various Chicago eye clinics on his return trip from a course of post-graduate work in Europe, has located in Asheville, N. C., where he will practice ophthalmology.

It is due Prof. Dr. Wm. Uhthoff to correct a statement recently printed in this department. Professor Uhthoff received a call to the University of Bonn, but declined the honor, preferring to remain at the University of Breslau.

The working committee of the Ophthalmic Section of the Canadian Medical Association, which is to meet in Montreal, Sept. 11, 12 and 13, 1907, is composed of the following: Drs. Byers, J. J. Gardner, Stirling, McKee and Tooke.

James Gall, who founded the South Devon and Cornwall Institution for the Blind at Plymouth, England, died recently, aged 73 years. He lost his eyesight in his early youth, but in spite of this handicap was very active in both scientific and commercial pursuits.

Sir William Collins, an ophthalmologist of London, and brother of Treacher Collins, the well-known London pathologist and opthalmologist, is an anti-vaccinationist and urges the substitution of isolation and disinfection in smallpox cases for vaccination.

At the eighty-fifth annual meeting of the Montreal General Hospital, held Feb. 19, 1907, the secretary's report showed 4,981 eye cases in the outdoor department. Dr. G. H. Mathewson was elected oculist and aurist, and Dr. S. H. McKee assistant oculist and aurist.

The school census recently completed in New York City shows the attendance of children is 688,427. Of these 58,948 have had their eyes tested and 17,928 were found to have defective vision. Dr. Maxwell, who is on the school board, recommends that the city supply glasses to those who need but who are unable to buy them.

THE following is reprinted from the "Lectures on the Method of Science" recently issued in England by the Clarendon Press. It illustrates the difficulties which constantly beset the path of advancing science:

"In an article upon the Royal Society, included in the Quarrels of Authors, the elder Disraeli gives an interesting account of this literary controversy. From this it appears that the zeal of the opponents often outran their discretion; for not only the aims, but many of the obvious practical results of scientific inquiry were inveighed against. Crosse, the Vicar of Chew Magna, in Somersetshire, anathematized the Royal Society as a Jesuitical conspiracy against both society and religion: he regarded the use of the newly invented optic glasses as immoral, since they perverted the natural sight and made all things appear in an unnatural and, therefore, false light. It was easy, he said, to prove the deceitful and pernicious character of spectacles; for take two different pairs of spectacle glasses and use them both at the same time and you will not see so well as with one singly; therefore, your microscopes and telescopes, which have more than one glass, are imposters. Hostility went farther than this: it was declared to be sinful to assist the eyes, which were adapted to the capacity of the individual, whether good, bad or indifferent. It was argued that society at large would become demoralized by the use of spectacles: they would give one man an unfair advantage over his fellow, and every man an unfair advantage over every woman, who could not be expected, on aesthetic and intellectual grounds, to adopt the practice."

THE SIXTEENTH INTERNATIONAL MEDICAL CONGRESS AT BUDAPEST IN 1900.—The Fifteenth International Medical Congress, held in Lisbon, has chosen Budapest, the capital of Hungary, for the site of their next assembly, and the preliminaries are already in process.

His Imperial and Apostolic Royal Majesty the King has graciously taken upon himself the patronage of the ensuing congress. The state and town have each contributed 100,000 crowns to defray the expenses.

The committee for the organization, execution, disbursements and reception, as also for the sections, is already formed and the statutes are drawn up.

There are twenty-one sections, each branch of science having a separate section assigned to it.

The date of the opening is fixed for August 29, 1909, and the sessions will be continued until September 4.

There is every reason to presume that the congress will be well attended. Hitherto they have shown an attendance of from 3,000 to 8,000 participants. Judging from the geographical situation of Budapest, at least from 4,000 to 5,000 participants may safely be reckoned upon.

The managers, of course, attach the utmost importance to the scientific activity of the congress, and every effort is being made to win over the most prominent representatives of medical science.

The first circular, which will contain every necessary information as well as the statutes, will be ready for circulation in the course of the year 1907. Meanwhile the secretary-general of the congress (Sixteenth International Medical Congress, Budapest, Hungary, VIII, Esterházy-uteza 7), will have much pleasure in giving information to inquirers.

THE RIPENING OPERATION FOR IMMATURE SENILE CATARACT.—The difference of opinion in regard to the important question as to the use of the ripening operation for immature senile cataract is remarked by F. C. Todd, Minneapolis (*Journal A. M. A.*, March 9), and to secure the most recent opinion on the subject he addressed letters to a number of leading ophthalmologists and received sixty-nine replies, which he analyzes and discusses. He believes himself that the ripening operation is imperative in some cases for humane reasons, and reports a case which he thinks illustrates this. The operation is contraindicated in cases complicated with high myopia, chorioiditis or other inflammatory conditions in cases predisposed to glaucoma or where adhesion to the iris is present. It is also not needed when a cataract is nearly mature or in patients over 60, when the cortex is of such consistency that it can be removed without much difficulty. Nor would it seem needed in the case of well-behaved patients, when irrigation can be used by an operator skilled in his practice. Admitting the advantages of irrigation, he concludes that the ripening operation is indicated: 1. In case of immature cataract (not contraindicated as mentioned above), in which a preliminary iridectomy is to be performed. 2. In those patients who would not be likely to behave well during the extraction, thus preventing the operator from performing much toilet or from practicing irrigation. If irrigation be not practiced, trituration of the lens would be indicated in all patients with immature senile cataract under 60, in whom, for special reasons, relief is required.

THE
OPHTHALMIC RECORD
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Original Articles.

AN ORBITAL TUMOR OF TEN YEARS STANDING.

ENDOTHELIOMA, KROENLEIN OPERATION.

C. A. LEENHEER, PH.G., M.D.

CHICAGO.

[Illustrated.]

Introduction.—A great variety of tumors are reported as occurring in the orbital cavity, but none that give a history of ten years' growth. Endothelioma in this situation is extremely rare. Among the great number of cases operated upon by the Kroenlein method we find only one case of endothelioma. The following is as complete and concise a history as could be obtained:

History.—Mrs. F., aged 34 years, married; family history negative; has always been and is at present in good health. Ten years ago, dating to September, 1904, she was told that her left eye turned out, and at that time consulted her family physician, who stated that she had a cold in her eye and gave her some drops to use. Eyesight at this time was good. The eye protruded more than the other, so much so that the patient noticed it, and, becoming very much worried, came on to Chicago to consult an oculist, who treated her for about a month. Conditions apparently remained unchanged and an enucleation was advised. This was declined. Nothing was done in the way of treatment for the next three years. The eye grew steadily worse, became more prominent, and vision entirely disappeared. She went to a public clinic, where she was again advised to have the eye operated upon, but again refused, because she wished to save the eye, which she said they wished to remove with the tumor. She stopped treatment for two years. Then she went to an advertising quack, who did not advise operation, but treated her for a year with electricity and internal medicines. The eye getting worse, she came to the clinic at Northwestern University Medical School on Sept. 26, 1904, wishing to know if anything could be done for the sight and appearance of her eye.

Examination.—Vision: R. 20/20. L. blind. Left eye protrudes about three fourths of an inch beyond the orbit, the lids covering and protecting the cornea nicely. The lids are swollen, which the patient states is worse in the morning. There is a divergent strabismus, with loss of motion of all the muscles, with the exception of the external rectus. The blood vessels, both of the lids (conjunctival surface) and globe, are enlarged and engorged, especially the veins. The cornea is clear, the pupil slightly larger than the right, and in outline round and regular. The media are clear. The examination of the fundus shows the disc elevated and best seen with a + 1D. The vessels are engorged and twisted, especially the veins. The outline of the papilla is indistinct. Tension is normal; on palpating toward inner side of the upper and lower lids, no distinct mass can be found. The structures are soft and the orbital cavity can be easily outlined.

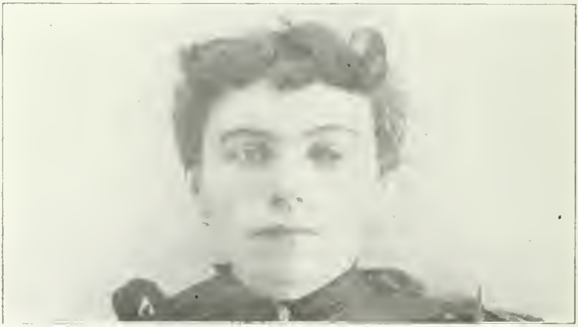

Fig. 1 Growth at 3 years

A positive diagnosis could not be made at this time. Some sort of a conclusion might be reached from excluding certain diseased conditions of the orbit and its structures. As, for instance, the following:

1. Benign and malignant tumors of the orbit, lacrimal gland, globe and retrobulbar structures.
2. Syphilis (gummata).
3. Aneurism.
4. Suppurative sinus diseases.
5. Traumatism.
6. Infections (cellulitis, periostitis).

Malignant tumors might be excluded because of a history of tumor for ten years. Bony tumor is not shown in the skiagraph, it being negative in every way. Ophthalmoscopic examination shows no evidence of intraocular tumor.

No history or signs of syphilis can be elicited, and anti-specific treatment was without effect. Aneurism is excluded by the absence of pulsation and bruit. Pressure does not lessen the size of the tumor. There is no distention of the frontal sinus; transillumination shows the sinus to be in healthy condition. There is no fluctuation and no history of traumatism. The diagnosis narrows down to one of a benign tumor in the funnel of the muscles toward the nasal side of orbit, causing an exophthalmos outward.

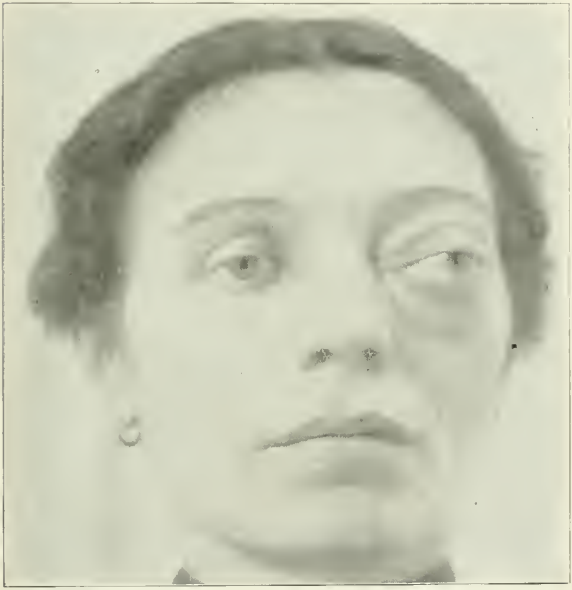

Fig. 2.—Before operation.

The patient entered the hospital on March 6, 1905, and was prepared for operation and operated upon the following day in Professor Schroeder's clinic. Kroenlein's method was used. An incision, slightly curved, was made, extending well up into the temporal region, down by the outer orbital wall, back in a horizontal direction toward the ear. The periosteum was detached up to the outer orbital wall. The bone was separated with a chisel, from within the orbital cavity, the soft structures, eye and tumor, being retracted with a spoon retractor. This wedge-shaped bone was left attached to the skin, making an osteoplastic flap. The muscle funnel was now entered and by blunt dissection the tumor removed piecemeal, which was found to completely fill the muscle funnel. After removal, all bleeding was checked, the wedge-shaped piece of bone replaced, the skin sutured and a dry dressing applied. Examination the following day showed a very severe reaction, ecchymosis extending across the bridge of the nose into the orbital tissue of the other eye, almost closing it, and extending into the scalp down to the inferior maxillary bone on the side operated on. The cornea was cloudy, conjunctiva chemotic, lids very much

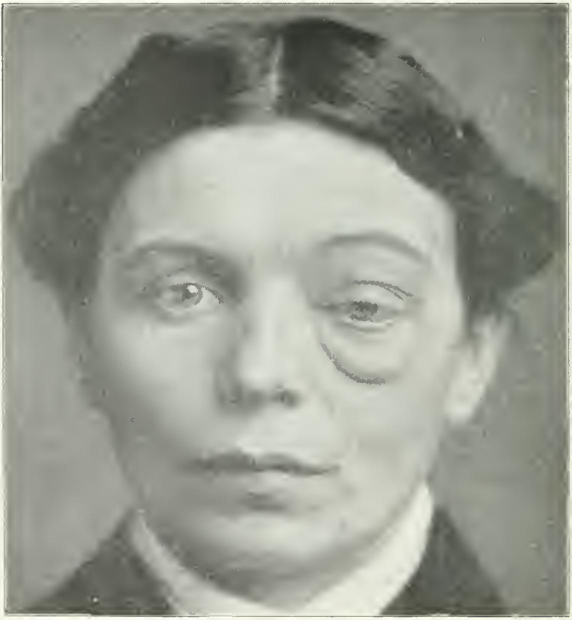

Fig. 2. After operation.

swollen. The globe had not at this time retracted. In a few days, under moist dressing, the swelling disappeared. Ecchymosis did not entirely disappear until four weeks later. The cornea cleared in the same length of time. The Kroenlein incision healed by primary intention.

On Aug. 23, 1905, the patient was examined and the following noted:

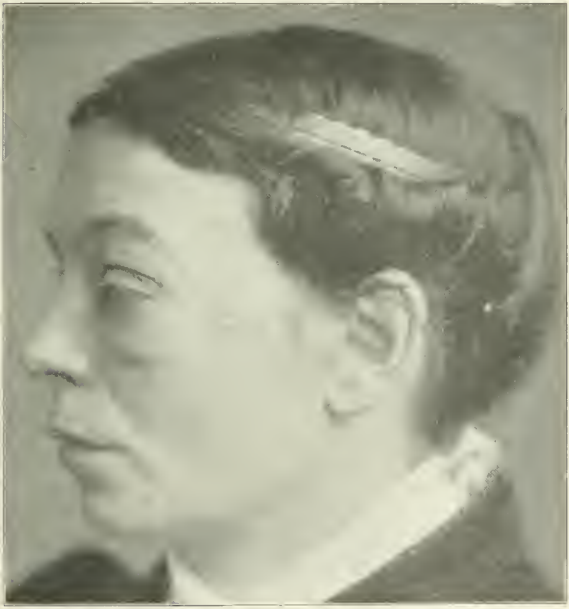

Fig. 4.—After operation, showing Kroenlein incision.

The lids are still swollen and flabby; the patient states that they are worse in the morning. Cornea is clear. Iris is still dilated. Movement improved slightly in all directions. Patient states that when she looks outward she feels a pulling sensation back of the eye.

Fundus shows lines of atrophy along the blood vessels. Disc can still be seen best with +4D. Vessels much smaller than before the operation.

On May 4, 1906, the patient returned, stating she believed the tumor was returning. The following was noted:

Lids: Both upper and lower still swollen and flabby.

Pupil: The same size as right.

Reaction to light very little.

Movement: Internal recti fairly good. In all other directions slight.

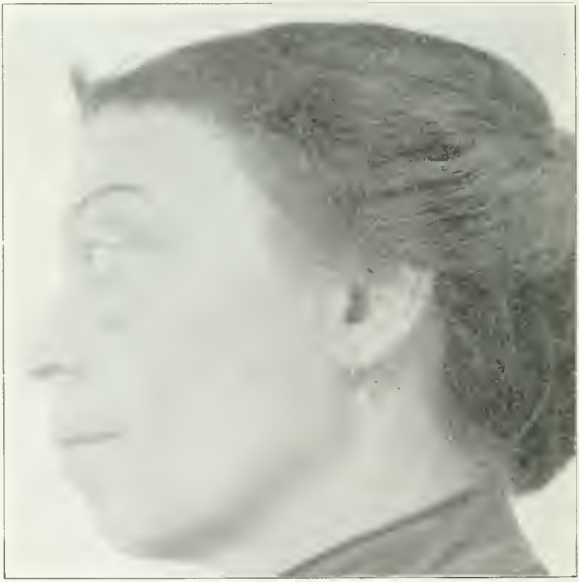

Fig. 5.—Before operation. Left profile.

Conjunctiva congested, vessels enlarged.

Fundus about same as last time.

Examination, April 8, 1907.—The eye protrudes much more than at last examination, showing that there is no doubt of a return of growth and increase in the rapidity of growth. Lids: Swollen and flabby. Pupil: The same size as right. Reaction: To light very little. Movement: Internal recti fairly good. In all other directions slight. Conjunctiva: Congested, vessels enlarged, especially toward outer canthus. Fundus: Remains the same.

Tumor showed the following:

Macroscopical.—Firm and irregular, numerous small pieces. One large piece had taken the shape of the posterior portion of the muscle funnel and as such was removed *in toto*. Combined weight of tumor was 8.53 grams.

Microscopical.—(See photographs.)

Diagnosis.—(Prof. Zeit.) "Hemangio-endothelioma perivasculare."

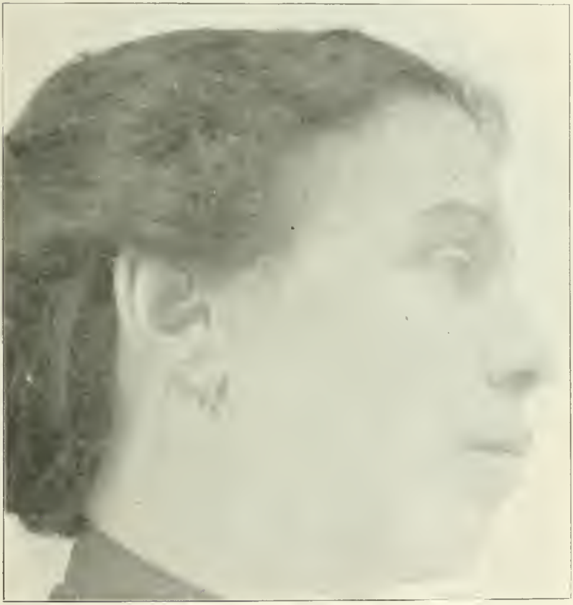

Fig. 6. Right side. Before operation.

KROENLEIN OPERATION.

The Kroenlein operation was done by Kroenlein in 1886 for a retrobulbar cyst. He did not publish the results of the same until 1889. Since then there have been numerous modifications of the operation. The operation in detail with the report of forty-five cases was published by Domela Nieuhaus in 1900. He reports the results of forty-five cases operated on, going into detail in each individual case. One hundred and fifty items of literature pertaining to this operation are published in connection with Domela's paper.

An article entitled "Zur Kroenleinschen Operation," by Dr. Joseph Helbron, published in Berlin in the year 1905, gives details of the different operations for retrobulbar tumors, and also reports the cases operated on.

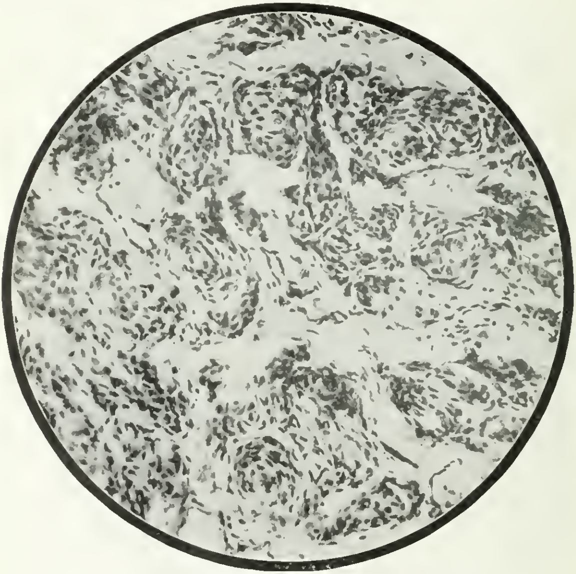

Fig. 7. Hemangio-endothelioma. x200

It might be well to give a classification of tumors of the eye and orbit by Dr. H. V. Würdemann, of Milwaukee, showing that it is next to impossible to attempt to make a diagnosis of this kind of tumor without a microscopical examination.

1. Neoplasm may commence in the eyeball and extend to the orbit. Of these, lipoma and cyst of the conjunctiva are rare and non-malignant, while glioma and sarcoma are common and very malignant.

2. Primary orbital neoplasms may be properly described under the heading of the tissue in which they arise. *a.* Those arising

in the mesodermal tissue, of which sarcoma in its various forms is most common. These are round, spindle, fibro-myxo, cysto, cylinder and plexiform.

The so-called benign growths are mainly lipoma. *b.* Angiomata in its several varieties, including the naevous cavernous angioma and lymphangioma. *c.* Pulsating exophthalmos and orbital aneurism. *d.* Tumors proceeding from the orbital walls: osteoma, osteosarcoma and cysts, the latter due to extension. *e.* Tumors of the optic nerve and sheaths, which are myomata, endothelioma, angiosarcoma, sarcoma, primary glioma, tuberculous disease, gummata, metastatic sarcoma. *f.* Tumors arising in the lacrimal gland, hypertrophy, cysts, dacrops, adenoma, myxomata, spindle, lymphosarcoma and epithelioma, carcinoma, cylindroma, lymphadenoma and chloroma. *g.* True cysts, under which we may likewise place extravasations, dermoid and cystoid growths.

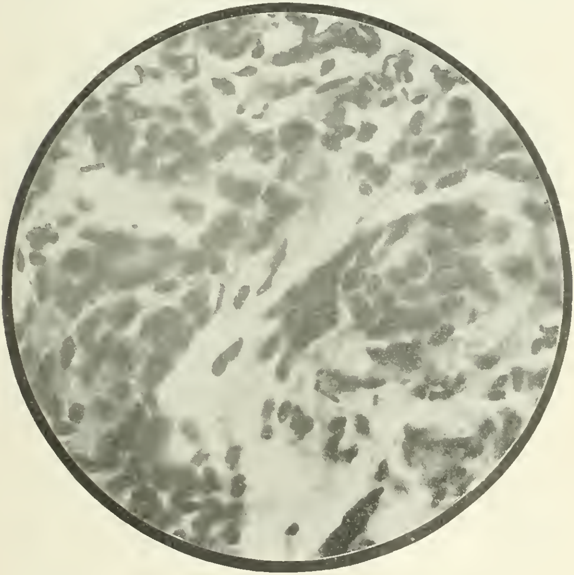

Fig. 8 Hemangio-endothelioma. x600.

3. Extending from the frontal, ethmoidal, maxillary and sphenoidal sinuses, tumors are mostly sarcoma. Extending from the

skin: Fibroma, neuroma, sarcoma, adenoma, gumma, rodent ulcer, carcinoma, epithelioma. Extending from the conjunctiva and cornea are the tumors of the same variety.

4. Metastatic sarcoma and carcinoma. The sarcomata of the orbit sometimes give rise to metastasis in the brain and abdominal organs, but the converse is supposed to occur especially with the carcinoma.

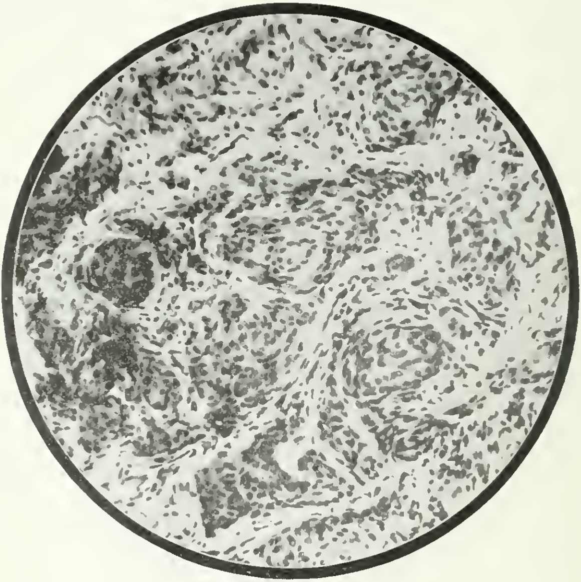

Fig. 9.—Hemangio-endothelioma, x200.

5. Exophthalmos from pseudo-neoplasms. *a.* orbital inflammations, phlegmonous and cellulitis, which may be primary or metastatic inflammatory hypertrophy. *c.* orbital protrusions from inflammation of neighboring sinuses. *d.* orbital anomalies, encephalocele.

LITERATURE OF ENDOTHELIOMA.

The diagnosis in this case being endothelioma, an attempt has been made to go into the literature of the same. American Textbook of Pathology. Hekteon and Riesman.

Endothelioma.—This variety of *sarcomatous* tumors has gradually become defined, although many points relating to it are still in dispute. The present tendency is to include among the endotheliomas many of such forms of sarcoma, as angio-sarcoma, myxosarcoma, perithelioma and cylindroma. They include all those tumors arising from endothelial cells, no matter how they may be subsequently transformed.

Stengel: Text-book of Pathology. "Endothelioma, sometimes designated endothelial cancer, resembles cancer very closely in histologic appearances in some cases. It appears, however, to be purely endothelial in origin; therefore, rather of connective tissue group or sarcomata."

Zeigler: "Endothelioma are organoid sarcomata in which the larger cell of the cell masses and strings are derived from a proliferation of the endothelium of the lymph spaces and of the lymph vessels."

Gaylord and Aschoff: Pathological Histology. Endothelioma. (Endothelial sarcoma). "Under this term are included tumors derived from the endothelium lining of the lymph spaces."

Virchow: "If a tumor springs from the cells of the blood vessels or lymph channels it is termed endothelioma."

Hausemann: "The term endothelioma comprises morphologically more than a single class of tumors, having a distinct alveolar architecture which was formerly described as carcinoma. Another group is sarcoma. A third consists of combinations of the previous two. A fourth comprises various tumors, all characteri ed by prominent changes in the stroma. A fifth group represents tumors resembling the adenomata. The clinical course of these is variable. The second and third are malignant; first are like true carcinomas. Those of the fourth are generally benign, but at times present local maglignancy and the adenomatous forms are similar." Hausemann proposes the following classification of endotheliomas:

1. Carcinoma endothelial.
2. Sarcoma endothelial.
3. Carcinoma sarcomatodes endothelioma.
4. Endothelial tumors with specific development of the stroma (cylindroma, myoma, chondroma).
5. Adenoma endothelioma.

In concluding, the American Year Book of Medicine and Surgery (Gould, 1897), says that in the whole chapter of tumors the group termed "endothelioma" stands in the greatest need of classification.

While the foregoing paper does not completely clear up the question, we think Hausemann has taken a step in the right direction. An article by Henri Coppez (Brussels), "Interfascicular Endothelioma of the Chorioid," January, March, 1901, states:

"The chorioid coat does not contain lymph vessels, hence the endothelioma of the tissue is almost entirely interfascicular, that is, it is not in immediate relation to vessels. In other parts of the economy it is unusual for endothelioma to spring exclusively from one variety of endothelium, and there is often simultaneous proliferation of endothelial cells from lymphatic spaces and lymphatic vessels. In addition to pure endotheliomas there are forms which are transitional between this and sarcoma. Such tumors arise from the walls of blood vessels as their immediate neighborhood, developing from the perithelial cells of capillary blood vessels, which, in some tissues, that is, the salivary glands, form a sheath to the capillaries. These transitional forms of tumors have many points of analogy with true endothelioma; a number of writers do not distinguish between them. As pointed out by Volckman, endotheliomata show a tubular arrangement of the cellular groups, while the transitional tumors exhibit a plexiform pattern, resembling that of the blood capillary from which they spring. Their cells also are fusiform and the nuclei smaller and more easily stained than is the case in endothelioma. It is, therefore, very desirable for clearness of classification to separate endothelioma from perithelioma. In the chorioid, in addition to the interfascicular endothelioma which has no intimate relation to vessels, we meet with tumors of connective tissue origin growing from the perithelial tissues of the vessels.

"Such new growths are designated peritheliomata by some writers, angiosarcomata by others. Sarcoma, perithelioma and endothelioma all originate from connective tissue and are closely related tumors. They may, indeed, be all grouped under the heading "sarcoma," an arrangement which is histo-genetically correct. Peritheliomata are in more intimate relations to vessels than to endotheliomata. The latter at the outset are quite independent of the vessels. It is, however, common for an endothelioma to exhibit in parts the appearance of perithelioma or of ordinary sarcoma. Theoretically, we find in the chorioid, (1) sarcoma, growing from the proper cells of the chorioid; (2) perithelioma, springing from the cells lining the lymph spaces. Practically the distinction is by no means so simple. It is probably true that every sarcoma of the chorioid contains foci which are typically perithelioma, and in an endothelioma there are always parts which are in character peritheliomatous and sarcomatous. To classify the variety of tumors it is necessary to determine which of the chorioid have undergone the greatest proliferation and to consider the general arrangement of the newly developed cells."

Professor Zeit states: "A careful examination of the literature, not only of the past but also of the present, has convinced me that many of the tumors recorded as carcinomata and sarcomata, as well as carcinoma endothelial, adenoma-endothelial, are in reality endothelial tumors. Endotheliomata differ greatly clinically from other malignant tumors in that they are of slow growth and do not produce metastases until late, when the tumor has reached considerable size. The neighboring lymph nodes are not early affected as is common in carcinoma. The prognosis after thorough removal is much better and a cure much more probable in carcinoma or sarcoma. Endotheliomata, however, are exceptionally prone to recur at the seat of operation; much more so and much earlier than carcinoma."

Dr. Weeks states: "In regard to recurrences after removal of tumors of this character from the orbit, I am convinced that the reports of cases are misleading in this respect, as they are often made too early to determine whether a recurrence will or will not take place."

CONCLUSIONS.

1. The pathologists differ very much as to classification of endotheliomata, but agree that they are derived from the endothelial lymph spaces and blood vessels.

2. That endotheliomata should be classed under sarcomas and are of slow growth and do not form metasteses until late, is the consensus of opinion of the pathologists. The case reported in this article upholds this opinion.

3. In the cases reported as endotheliomata, which are found in the literature, the authors do not go into the microscopical findings of the characteristics of endotheliomata.

4. If all the orbital growths were examined microscopically, more endotheliomata would be found.

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A PRACTICAL TRIAL FRAME.

NELSON M. BLACK, M.D.

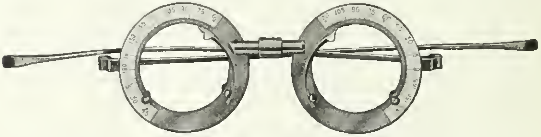
MILWAUKEE, WIS.

[Illustrated.]

The majority of trial frames are so bulky and have so much complicated mechanism to allow of their proper adjustment they seriously handicap one in their use and are decidedly uncomfortable to the wearer.

The one about to be described is modeled from some observed in a Vienna clinic a few years ago and have been used with great satisfaction by the writer.

The construction is simple, consisting of two flat round pieces of metal, the center being stamped out to meet size of trial lens; these perforated discs are hinged to a pair of straight flat or riding sides. They are connected by two pieces of metal which form the nose piece and are dovetailed so as to slide on one another to regulate the pupillary distance. A spring and stud on each side of the metal ring hold the lens in place. The various axes are marked on a celluloid band on the outer side of the frame. They are made by F. A. Hardy & Co.



CARCINOMA OF THE CORNEA.*

WILLIAM H. DUDLEY, M.D.
LOS ANGELES, CAL.

[Illustrated.]

Neoplastic growths of the cornea, while not especially common, yet are not particularly rare, and the case reported here is of interest more particularly on account of its history and the size of the tumor than of its character. Inasmuch as a favorite seat for epithelial new growths is at a point where the surface epithelium changes its character, so here the sclero-corneal junction appears to be the usual seat of origin of epithelial new growths, and from this point they extend inward, and sooner or later infiltrate and become incorporated in and upon the corneal tissue proper.

The case which I wish to present is that of Henry Glesner, aged 83, native of Germany, of more than usual health and vigor for one of his age, who came Feb. 9, 1894, with what appeared to be a vascular keratitis, stating that some fifteen years previous he had been injured on the side of his face by a kick from a horse, the eye being injured somewhat at that time, and though he could not see well with this eye it had given him little trouble otherwise. Examination showed a more or less vascularized macula of the cornea, extending from the inferior temporal quadrant of the limbus upward and inward, just covering the pupil, which was small. The unaffected portion of the cornea and the iris appeared normal, as well as the remaining portions of the eye not covered with the macula. Examination further showed that the scar tissue, while extending to and including the limbus, did not implicate the sclera to any degree.

With the hope of clearing up the vascularity of the part, various astringents were used, but with little effect. The patient was a firm believer in a method of treatment known as "powwow," and I was aware that he often lapsed from rational therapeutics, and also applied various vegetable concoctions, the wonderful curative properties of which he was wont to extol; so whatever treatment he might receive from his physician was prone to be supplemented by that of his own. The patient was seen at irregular intervals for over a year, when it was noted that an elevated papillomatoid growth had taken the place of the previous vascular condition, which now nearly covered the cornea. A portion of this was removed and sections made which were pronounced, by a competent pathologist, to be papillomatous. Three months later (June,

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*Presented to the Eye and Ear Section of the Los Angeles County Medical Association, April 8, 1907.

1895), the growth had recurred and another piece removed which measured 6x9x3. Sections of this, like the former, were considered by the pathologist to be papillomatous. In September of the same year the growth had recurred again, and was again removed and examined, and the previous microscopic diagnosis was confirmed. April 25, 1896, the patient appeared after five months absence: at this time the growth had extended completely over the cornea and covered a portion of the temporal sclera. Microscopic examination of a piece of this shows a decided change in its structure, it being now a typical epithelial carcinoma. The patient being averse to any other operative procedure, was lost sight of for about eighteen months, or until September, 1897, when he appeared with a tumor which was too large to be even partially covered by

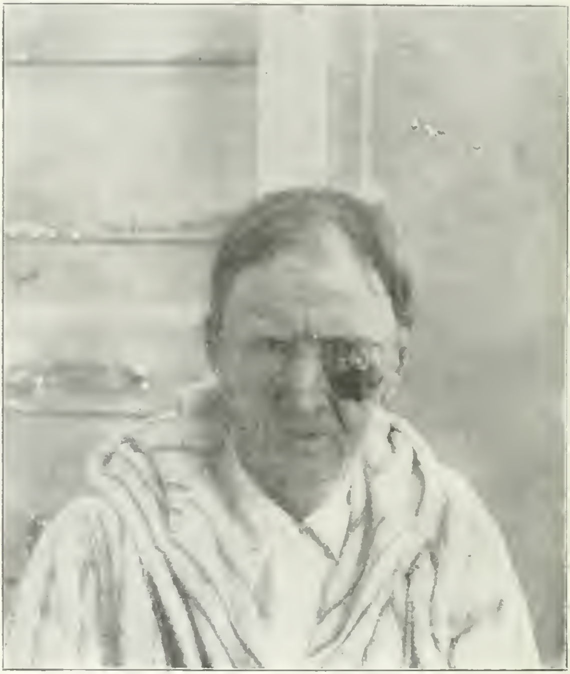

Figure 1

the upper lid, and though causing considerable trouble, the patient was unwilling to part with it. April 26, 1898, the patient was seen at his house; the tumor had grown greatly and now extended from the orbital ridge downward to a point nearly on a level with the lower margin of the nose and laterally somewhat beyond the line of the temple. The appearance is fairly well represented by Figure No. 1, which was taken immediately before its removal. The growth was now in an ulcerated condition, was bleeding more or less and was painful, and the patient was anxious for its removal. Two days later under ether it was removed by introducing a pair of scissors between the growth and the face, which divided the eye about seven mm. in front of the posterior pole, the posterior portion being removed as in an ordinary enucleation. An examination of the tumor now showed that it had extended backward around the sclera, inclosing more than one-half of the globe, though it did not appear to be attached to any extent to the orbital tissues. The backward growth of the mass upon the globe

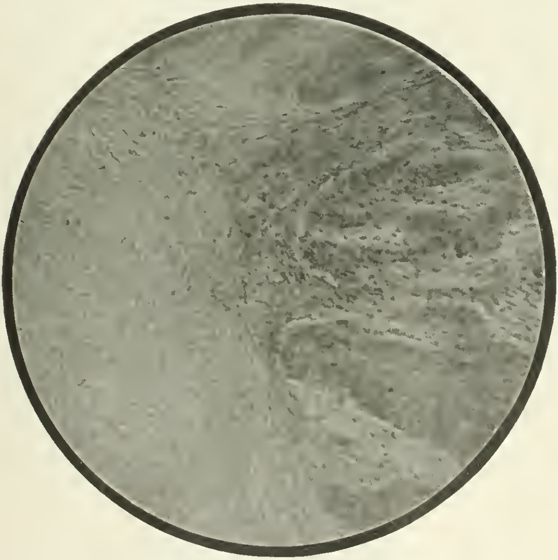

Fig. 2. Showing intimate relation of connective tissue elements of tumor with cornea.

had drawn the eye something over a half inch forward from its original position. A careful examination of the interior of the eye, macroscopically, showed no apparent pathologic change, except the adhesions of the tumor to the cornea and sclera wherever it came in contact with it. Microscopic examination of the tumor showed it, like the former section examined, to be a carcinoma, and there appears to be some acute inflammatory changes in places in the region of the junction of the tumor and the cornea, as shown by the rather extensive round cell infiltration of the cornea adjacent to the tumor. In places, also, the fibrous tissue of the growth extends into and is lost in the fibrous tissue of the cornea proper, and this occurs at points some little distance from the limbus. In this case it would hardly seem possible that it should be otherwise, inasmuch as it is an instance of metaplasia, being an engrafting of a new growth upon cicatricial tissue of the part, first presenting the characteristics of a papilloma, and later those of a carcinoma. The accompanying photo-micrograph shows reasonably well some of the changes referred to. The recovery after the operation was prompt, and inasmuch as it was impossible at the time of the operation to know positively whether the whole of the growth was removed, I was somewhat curious to see the results after a few months. About two months after the operation the orbit and lids showed no return of the tumor, but the palpebræ showed a rather peculiar condition. There was cicatricial contraction of the lower lid, reducing the palpebral opening to three-eighths of an inch, the upper lid being normal in appearance, hung like a hood over the canthal opening. The patient lived to be 89 years old, or about two years after the removal of the eye, but there was no return of the tumor, either *in situ* or by metastasis, so far as I was able to judge.

A STUDY IN ATAVISTIC DESCENT OF CONGENITAL CATARACT THROUGH FOUR GENERATIONS.*

Edward Stieren, M.D.

Associate in Ophthalmology and Otology, Medical Department, Western University of Pennsylvania; Ophthalmologist and Otologist to Passavant Hospital and to the Protestant Home for Incurables.

PITTSBURG, PA.

The earliest traceable forbears of a progeniture of seventy-eight offspring, seventeen of whom were born with opacities of the crystalline lenses, were a young Bavarian orphan girl and a German farmer, Adam P., both with normal eyes, who located in Pittsburg about 1830.

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*Read before the College of Physicians of Pittsburg, April 8, 1907.

MR AND MRS. ADAM P.: EYES NORMAL

- Male, eyes normal.
  - Male, eyes normal; died in infancy.
  - Female, eyes normal.
    - **Male, born blind; died in infancy.**
    - Female, eyes normal.
    - Female, eyes normal.
  - Female, eyes normal.
    - Female, eyes normal.
    - Female, eyes normal.
    - Male, eyes normal.
    - Female, eyes normal.
    - Female, eyes normal.
    - **Male, born blind; died in infancy.**
    - Male, eyes normal; miscarriage, 7 mos.
    - Female, eyes normal.
    - Male, eyes normal.
- **Male, born blind; died at 15 mos.**
- **Male, born blind; died at 5 mos.**
- Male, eyes normal.
  - Male, eyes normal.
  - Male, eyes normal.
  - Male, eyes normal.
  - Female, eyes normal.
    - **Male, born blind; died in infancy.**
    - Male, eyes normal.
  - Male, eyes normal.
  - Male eyes normal.
  - Female, eyes normal.
  - Male, eyes normal.
- Female, eyes normal.
  - Female, eyes normal.
    - **Male, born blind; died at 1 yr., 21 days.**
    - **Male, born blind; died at 9 mos., 14 days.**
    - **Male, born blind; died at 13 mos., 14 days.**
    - Male, eyes normal.
    - **Male, born blind; died at 9 mos., 22 days,**
    - Male, eyes normal.
  - Female, eyes normal; died at 6 mos.; spasms.
  - **Male, born blind; died at 9 mos.**
  - Male, eyes normal; died at 4 yrs.; typhoid fever.
  - **Male, born blind; died at 1 yr., 3 mos.**
  - Male, eyes normal.
    - Male, eyes normal.
  - Male, eyes normal. (Recently married.)
  - Female, eyes normal.
  - Miscarriage, 3 mos.
  - Male, eyes normal; died at 8 yrs.; diphtheria.
  - **Male, born blind; died at 3 mos,**
- Female, eyes normal.
  - Male, eyes normal.
  - **Male, born blind; died at 3 mos.**
  - Female, eyes normal.
    - Female, eyes normal.
    - Female, eyes normal.
    - **Male, born blind; died at 2 mos., 8 days.**
  - Male, eyes normal.
  - Male, eyes normal.
  - Female. eyes normal.
    - Male, eyes normal.
  - Male, eyes normal.
  - Female, eyes normal.
- Female, eyes normal; died in puerperium.
- Female. eyes normal.
  - Female, eyes normal.
    - Female, eyes normal.
    - **Male, born blind; died in infancy.**
  - Male, eyes normal. (Married, but no issue.)
  - Female, eyes normal.
  - Female, eyes normal.
  - Female, eyes normal
  - **Male, born blind; died in infancy.**
  - Female, eyes normal.
- Male, eyes normal; died in infancy.
- **Male, born blind; died in infancy.**
- Male, eyes normal; died in infancy.
- Male, eyes normal; died in infancy.
- Male, eyes normal; died in infancy.
- Male, eyes normal; died in infancy.

NOTE.—Blind children in heavy type.

Their issue consisted of fourteen children, ten males and four females. Six survived the age of puberty, married and had issue. The remaining eight died in infancy, the second, third and tenth having been born blind.

The first offspring of Mr. and Mrs. Adam P., a male, had three children. Number one, a male with normal eyes, died in infancy. Numbers two and three, females with normal eyes, both married, the elder having three children, of whom one, a male, was born blind. The younger had nine children, one of whom, a male, was born blind and hydrocephalic.

The fourth offspring of the original stock had an issue of six males and two females. But one of these, the fourth child, a female, married and had two male children, one born blind and dying in infancy. The other with eyes normal, never married and is living to-day.

The fifth offspring of the original stock, a female (one of the informants of this history, now 65 years old), had an issue of eleven, seven males, three females and one miscarriage at three months. Three of the males were born blind and died in infancy; of the survivors, three have married; the union of the oldest, a female, resulted in six male children, four of whom were born blind and hydrocephalic. (This branch of the family having been under the observation of the writer for several years, will receive more detailed attention further on.) The second to marry, a male, has one son with perfect sight. No offspring has resulted from the union of the third, a male.

The sixth offspring of the original stock, a female, had eight children, five males and three females. One of the males was born blind and hydrocephalic, dying in infancy. Of the remaining, two females married, the first having two female offspring with normal eyes and one male child who died in infancy, blind and hydrocephalic. The second has but one child, a male, with normal eyes.

The seventh offspring of the original stock died in puerperium.

The eighth, a female, had an issue of five females and two males, one of the latter being blind at birth and dying in infancy. The first and second child, a female and male respectively, are the only ones to have married up to the present time, the former having two children, one of whom, a male, was born blind and died in infancy. The latter has had no issue as yet.

The succeeding offspring of the original stock, six in number, all males, died in infancy, one having been born blind.

My informants (the fifth offspring of the original stock and her husband) assert that all the blind children died in convulsions, and when it is remembered that many of the children who died in infancy were hydrocephalic, it gives one the impression of a general morbid condition, although there is nothing in the living members of the family to indicate syphilis. The branch referred to above as being under my personal observation shows a decided rachitic tendency, however. The fontanelles are tardy in closing, the cataracts are of the lamellar variety, the chests pigeon-breasted and the skulls box-shaped. The mother of this branch has a marked enlargement of the thyroid gland; her youngest offspring is decidedly rachitic, at six months of age not being able to hold his head erect.

My informants claim that the birth of a blind child in their family is always heralded by an enormous amount of amniotic fluid which makes itself manifest early in the pregnancy. So constant is this phenomenon that they have grown to regard an abnormally distended abdomen with ominous significance.

That the blindness was due to cataracts in the children of the earlier generations and not to other antenatel causes (hereditary atrophy of the optic nerve, pigment degeneration of the retina, etc.) is assured by the observations made by Dr. Ferdinand Koeller years ago, which he subsequently reported in the Allegheny County Medical Society, and to whom I am deeply indebted for the privilege of incorporating them in this report.

From the foregoing account and a reference to the family tree it will be seen that the descent of cataractous lenses in this family was in no instance direct, as the affected offspring invariably succumbed at an early age. Each married female in the connection, with one exception, had one or more blind male offspring. The transmission being always from mother to son (never from mother to daughter and never from father to son or father to daughter), it is evident that the male progenitor could not transmit the stigma to his son, but could transmit the tendency to his daughter, in whom the degenerate physiologic units combined, to be visited upon her male offspring.

Interesting reviews of the observations of other investigators of hereditary cataract are given in Norris and Oliver, Vol. IV, and in the Ophthalmic Year Book for 1906.

Nettleship studied hereditary acquired cataract and hereditary congenital cataract, finding in the latter class 90 males, 93 females and 55 whose sex was not given. His best illustration was a family in which no less than 30 members, in four generations, were known to have been affected, the history apparently showing that the cataract was present at birth in every case. Nettleship's study of hereditary acquired cataract brings together 167 families, in which 194 males were affected, 292 females, and 41 patients whose sex is not mentioned. The longest family history was one involving six generations, in which 18 cases were known to have occurred. The history had been traced five generations in three families, four generations in five families, and three generations in thirty-one families. He found that in acquired cataract the transmission was almost always direct, that is from affected parent to child, being transmitted almost as frequently to sons as to daughters. In this respect different families showed different characteristics. In eight pedigrees the descent was invariably from female to female, in four families the descent was from male to male throughout, while in five others a female transmitted it in nearly every case.

Dyer records an instance in which cataract was transmitted to all male members of the family for three generations, while only some of the female members were affected. Baudon reports a history of a cataractous individual who had seven children. Of these, five were affected, three of whom married. No. 1 had four children, three being born with cataract. No. 2 had four children, of whom three also had congenital cataract, while No. 3 had but one child, whose eyes were healthy. Berry records a history of hereditary cataract extending through five generations and affecting fifty-five members of the family. J. Tatham Thompson observed a family in which cataract had been hereditary for four generations. J. Green reports twenty-one cases of cataract out of seventy individuals in one family. Fukala gives an interesting history of a cataractous grandmother who had thirteen children. Of these, nine were cataractous and five transmitted the tendency to their children, three females and two males. One daughter had five children, three of whom had cataract; a second daughter had two cataractous sons out of a family of ten children; the third daughter had three cataractous children out of a family of four. The two sons had each four children, and of these each had one female child affected with cataract. These cataracts were not congenital, but developed during adolescence.

From a study of the subject it appears that the phenomenon of atavism, or breeding back to a more remote ancestor, is manifested occasionally in the acquired as well as in the congenital form of cataracts in families. It is also evident that the congenital occurrence of familial cataract is much more rare than its appearance in post-natal or later life.

Reviews.

REVIEWS BY REINHARDT REMBE, M.D., CHICAGO.

Avoidable Diseases of the Eye.* Prof. C. Hess.—It is said that in some countries it is the custom to deduct from the annuity of the physician a stipulated amount for each illness occurring among the members of the family that are entrusted to his care. I cannot vouch for the truth of that statement. Let us imagine an Utopian country in which every oculist is entrusted with the responsibility of looking after a certain part of the community and whose duty it is to protect them against diseases of the eye. He would be obliged to examine the inhabitants from time to time and each individual would report immediately on the appearance of ocular symptoms. Although there exists no such community at present, it may be a possibility of the future.

Let us imagine, if such were feasible, what might be accomplished. Even the first step in life brings with it dangers of infection. Pneumococci, staphylococci, streptococci, gonococci, etc., may during parturition get into the conjunctival sac and set up an inflammation, and if not properly treated, especially if it were due to the presence of the gonococcus, might cause blindness. The value of prophylaxis in such cases has been recognized by governments and much good done by its enforcement. Ophthalmia neonatorum has been reduced from 9 per cent. to below 1 per cent. by the employment of the Credé method. In asylums for the blind we find that 20 per cent. of the inmates become blind through ophthalmia neonatorum. This would disappear if the physician had a position in the community as outlined above. The oculist frequently meets with conjunctival and corneal troubles of an eczematous nature occurring among children of the poorer classes with resulting opacities of the cornea and serious damage to the eyes, which might have been obviated if the cases had been seen in the first stages of the disease and ordinary methods of treatment had been instituted early. Serpiginous ulcer of the cornea, usually occurring in the poorer classes, is frequently neglected. In this class of cases Roemer's pneumococcus serum is a valuable remedy and one which has usually proved of benefit in checking the pneumococcus infection of the cornea, effecting in most instances a rapid cure without scar formation. In the prevention of ulcers of this variety it is important that attention be paid to the condition of the lacrimal ducts, since infection frequently occurs in those who have diseased lacrimal sacs, usually an extension of disease occurring in the nares. A simple epiphora should not be overlooked, but its cause sought for. Patients are frequently very indifferent to such trivial ailments. So far as disease of the iris is concerned, we have to deal principally with the recurrent form of iritis. This not being painful, is usually neglected; consequently when the oculist is ultimately consulted the iris is adherent to the lens, the pupil covered with exudative material and vision is permanently injured or destroyed by secondary glaucoma. Even these patients might be saved from blindness if properly treated.

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*A clinical lecture delivered at the Eye clinic of the University, Wuerzburg.

The same applies to chorioiditis, providing the patients come to us at the beginning of their troubles and before the foveal region is hopelessly destroyed by the disease. Fortunately the acute attacks are so painful that medical aid is sought at the onset and loss of vision is avoided. Chronic glaucoma may be accompanied by very little pain, and, therefore, patients do not seek medical aid until vision is entirely destroyed. In such cases an operation, if performed early, would probably prevent blindness in many cases. The majority of diseases of the optic nerve—atrophy, hemianopsia, etc.—are at the present time absolutely beyond our control. On the other hand, atrophy of the optic nerve due to alcohol and nicotine poisoning is within the sphere of prevention. The prospect of recovery is in these cases very favorable if the patient begins treatment early; these cases if neglected become more and more hopeless. We can prevent serious injury to the eye by the correction of errors of refraction. A moderate degree of hypermetropia is in early youth often the cause of convergent squint, which, if left to itself, will lead in the squinting eye (amblyopia exanopsia) to irreparably defective vision. Within the last ten years it has been generally recognized that squint may be cured and vision saved by prescribing proper lenses at the earliest date possible. Regarding myopia and its correction, some oculists claim it is better to prescribe weak lenses, while others think it better to do without lenses altogether. Experience and statistics have proved the fallacy of either of these theories. The early prescribing of lenses which fully correct the existing myopia checks its progress in most instances and tends to prevent serious consequences, such as chorioiditis and retinal detachment. Some writers have expressed the opinion that the development of cataract and glaucoma are in a certain relationship with hypermetropia and astigmatism and could be prevented by prescribing the proper lenses. These views have proven themselves untenable, as has also the theory that there was a relationship between hypermetropia and epilepsy.

Blindness in both eyes, due to sympathetic ophthalmia, can in many instances be prevented. The fault lies less on the part of the physician than that of the patient, who finds it difficult to consent to the enucleation of the injured eye, whose early removal is necessary.

The dangers and sequelæ arising from trachoma might be reduced to a minimum if treatment were begun early. Retinitis pigmentosa is in more than 60 per cent. of all cases due to intermarrying of relatives, which if prevented would save a good many from blindness. The same applies to legislation forbidding marriages where a high degree of myopia exists on both sides. The significance of diseases of the eyes and congenital syphilis is so well known that further comment is unnecessary; in any case the eye troubles are of secondary importance. The same applies to xerosis and keratomalacia in marasmic children, although suitable food and care can accomplish a good deal in this direction. Many eyes are lost through accidents due to criminal negligence; toy pistols, fire crackers, toy guns, throwing of stones among children, allowing children to play with scissors, etc.

Furthermore, it is interesting to note that in Austria, where compulsory vaccination does not exist, 20 to 30 per cent. of the inmates of the asylums of the blind contracted blindness through smallpox. In Germany, where vaccination is compulsory, only 1 per cent. of the inmates of blind asylums are blind from smallpox; certainly an argument that even the most obstinate adversary of vaccination must accept. The number of blind people in Germany is about 30,000; on the strength of these statistics at least one-half of the total cases of blindness could have been absolutely prevented. In addition to these cases there are a great number of people, outside of the asylums, who are going about with less than half vision and many more with more or less defective vision.

It would be interesting to determine how many eyes are sacrificed by being treated by quacks.

The oculist in the Utopian state would have a very grateful task before him and, it may be added, it would not require drastic measures to accomplish the same results under our present social conditions. The people would save millions and the family would be spared an inestimable amount of misery.

Treatment of Hypopyon by Capillary Drainage of the Anterior Chamber.*—ROLLET AND MOREAU.—If in cases of hypopyon keratitis, regardless to what bacteria they are due, the accumulation of pus in the anterior chamber is considerable, authors not only recommend to open the anterior chamber of the eye but also resort to drainage. The following suggestions for their drainage method are recommended: The lids are held apart by the Desmarres retractors: eye speculum should not be used; the eyeball is grasped above by fixation forceps, the cataract knife is then introduced at the outer corneal scleral margin, midway between the center of the pupil and the periphery of the cornea and continued through the corresponding side of the cornea, then both punctures are widened by cutting downward, thus leaving a corneal bridge below. A horse hair 5-6 cm. long is slipped through the openings. Should there be any difficulty in getting the drain through the opening the blunt end of a hypodermic syringe is introduced into one corneal opening and the drain is caught by the needle and thus pulled through the opposite side, a manipulation requiring some dexterity. The corneal ulcer is treated according to the usual methods. Lids are closed and both eyes bandaged. After 12 to 24 hours the bandages are changed. The drain may remain 24 hours longer without causing any inconvenience. A prolapse of iris usually takes place. It is astonishing how quick the lumpy hypopyon is dissolved and washed out of the anterior chamber by the continuously flowing aqueous humor. Detrimental influence upon the iris or lens has never been observed; it has happened, though, that the drain cut through the corneal bridge below.

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*Revue generale d'ophtalmologique.

Subconjunctival Injections of Air as a Therapeutic in Eye Practice.*—Dr. Terson pere, et. I. Terson.—Terson recommends subconjunctival injections of sterilized air in the treatment of diseases affecting the anterior portion of the eye. The idea originated with Koster of Leyden, who reported a number of very favorable results. This induced Terson to take it up. He made more than 250 injections on 57 patients afflicted with marginal and central corneal ulcers. The rapid healing and the extremely insignificant formation of scars was a particularly noticeable feature. Very effective were the injections in cases of ulcers situated at the sclero-corneal margin with or without involvement of the sclera. In interstitial keratitis effects were not so pronounced. Photophobia became in all patients decidedly reduced and to a degree that was surprising. The sterilization of the air was affected by a very simple method, the point of a hypodermic syringe is heated over an alcohol lamp and then through the red hot needle the air is sucked into the syringe. The technic of injecting is not essentially different from subconjunctival injections, the only point to remember is to press the air out quickly, causing quite a tumefaction of the entire conjunctiva. The amount injected should vary between 1-2 cm. in intervals of 2-8 days, during which time reabsorption takes place. The injections are as a rule painless and were followed by no bad effects.

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*Annales d'oculistique. February, 1907.

Mitin, A New Base for Eye Salves.*—DR. HAAS VIERSEN.—Viersen made a number of experiments with this new preparation. His conclusions are: It is the best base for ointments that are to be used in the eye. Mitin in itself excels vaselin, simple ointment, cold cream, lanolin, glycerol, etc. It has a specially soothing influence upon the lids, hence applicable in all lid diseases, particularly of a chronic character. Mitinum purum is a white, homogeneous and staple substance of ointment-like consistency. Mitin paste is composed of oxid of zinc and starch in proportions similar to Lassar paste. Mitin mercury corresponds in composition to blue ointment, with the difference that it is absorbed by the skin in half the time and does not soil at all. Mitin soap is a neutral superfatted soap, foams well and very mild, consequently useful as a remedy for the treatment of diseases of the lid margins, also better than ordinary soap as a cleansing agent before operations. The preparations are made by Krewel & Co., in Koeln a. Rh. and can now be had at the Central Drug Co., Chicago.

New Silver Salts for Treating Eye Diseases.†—DR. A. DARIER.—Darier has the following to say relative to the therapeutical value of the new silver salts. Organic silver compounds are the most frequently employed in conjunctival inflammations. Argentamin has the advantage over the silver nitrate on account of its more penetrating effect. Similar organic silver compounds are argonin, largin, itrol, actol. Collargol is soluble metallic (colloidal) silver, its antiseptic qualities make it suitable for intravenous injections, inunctions, instillations and in all purulent diseases of the conjunctiva, cornea and lacrimal ducts. These therapeutic effects are explained by its germicidal and antitoxic powers.

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*Therapie u. Hygiene d. Augues, iii, 1907.

†Clinique optalmologique.

also by the phagocytic reactions which it occasions. Protargol is not changed by the secretions of the eye, it combines with a great penetrating effect a strong antiseptic. The applications can be left to the patient without any danger. Argyrol (albuminoidal silver) is the ideal silver compound containing 30 per cent. metallic silver. It combines with its caustic effect a soothing influence over the inflamed mucous membrane. Its chief employment is in the purulent conjunctival affections, dacryocystitis and ophthalmia neonatorum. In the latter case it must be frequently applied and in serious cases every hour, even as often as every half hour, day and night.

Reports of Societies.

COLORADO OPHTHALMOLOGICAL SOCIETY

Meeting of March 16, 1907.

David B. Strickler, M.D., presiding.

FISTULA FOLLOWING PANAS' OPERATION FOR PTOSIS.

Dr. D. H. Coover, Denver, presented a man, aged 35, who had been operated on in Königsberg, Germany, seventeen years before, for ptosis of each upper lid, with resulting ability to elevate the lids to the horizontal plane. A Panas operation had been done on the right; and a fistula, lined with epithelium, had developed where the tongue ot skin had been drawn up under the bridge of tissue dissected up from the eyebrow. The fistula was Y-shaped, two openings above and one below, and a probe, 2 mm. in diameter, could be passed its entire length. On the left an elliptical piece had been removed with success.

ABSORPTION OF LENS AFTER DISCISSION IN ADULT.

Dr. G. F. Libby, Denver, exhibited the case of traumatic cataract shown by him at the October meeting of this society (see OPHTHALMIC RECORD, December, 1906, page 615). On Dec. 3, 1906, a broad horizontal discission had been made through both capsules. The mushy lens matter which gushed out and covered the lower third of the iris and filled two-thirds of the pupil caused only a moderate iritis, easily controlled by atropia. A week later instillations of 5 per cent. dionin every two days commenced and continued for four weeks; then followed the use of 2 per cent. every three days for three weeks. Examination on Jan. 7, 1907, showed that all lenticular cortex and one-third of the capsule had been absorbed. V. = 4/viii cum + 13.00 sph. and ability to read D. 1.00 cum + 18.00 sph. On February 25 V. = 4/v + cum + 13.00, and the patient read D. 0.50 cum + 18.00 sph. When shown before the society at this meeting, vision for near and distance was normal with above lenses, the pupil was black, the iris reacted properly to light and consensually, and only a very narrow peripheral ring of capsule remained.

RETINO-CHORIOIDITIS WITH CENTRAL SCOTOMA.

Dr. W. C. Bane, of Denver, showed M. J. T., aged 24, a medical student, with a scotoma in the right eye. Ten days before (March

6, 1907), while the patient had been looking far upward and to the right, there suddenly developed a blurring of vision with the right eye that remained, though gradually disappearing. The dimness interfered with close work. Vision was 5/vi with each eye. The test with the perimeter revealed a distinct scotoma, limited to the upper inner nasal quadrant of the field and extending but 7° from the point of fixation. There was a slightly mottled appearance in the fundus 1 mm. outward and downward from the macula. The patient was advised to rest the eyes and take potass. iodid in increasing doses. There was no specific history. On March 9 the haze continued. V. = 5/x. On March 12 a clearing of the dim area was noticeable, so that the object was readily outlined through it. On March 16 the patient stated that he was able to see more clearly through the dim area. Vision = 5/vi. The chart indicates the size of the scotoma.

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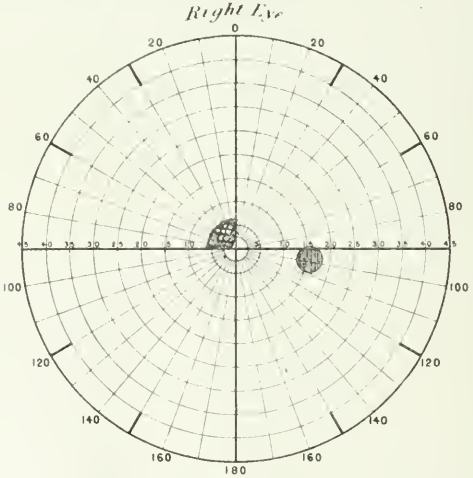

TRAUMATIC CATARACT.

Dr. E. R. Neeper reported a case of traumatic cataract in a man of 37, a blow from a twig having caused rupture of the anterior capsule. The eye had become fairly quiet in ten days, when a broad discission was made. Following instillations of dionin daily for five months, absortion of the cortex was complete and useful vision resulted.

INTERSTITIAL KERATITIS.

He also reported a child of 7 years suffering from severe interstitial keratitis, with dense "salmon patch," in one eye, the other being similarly but less affected. K. I. had been given, with disturbance of appetite and no benefit, but syrup hydriodic acid was well tolerated and beneficial. Therapeutic suggestions were requested.

Discussion.—Dr. Jackson advised mercury or the salicylates.

Dr. Strickler suggested cod liver oil.

Dr. Libby advocated the addition of calomel to the daily treatment, with hydriodic acid constitutionally, and to the atropia locally would add the use of 1 or 2 per cent. dionin tentatively. He said that J. Hutchinson had characterized the salmon patches in the cornea in this disease as pathognomonic of inherited syphilis.

Dr. Neeper reported the removal of a piece of steel, ¼ by 1½ mm., by Dr. Patterson and himself with an electro-magnet at an electric power house, the only place where the current could be secured by them.

Dr. Jackson reported a case of neurasthenia with 4 D. of hyperopia and 1.50 D. of astigmatism treated by the rest cure in the German Black Forest, with no suggestion as to an ophthalmic examination.

Dr. Bane reported the use of 12° prism effect for divergent squint, with comfort; and Dr. Jackson 20° total for distance and 30° for near in this condition and 12° for vertical squint, although he had rarely given over 3° up and down for the latter error.

Dr. Libby reported the death of his two cases of chronic interstitial nephritis, with retinitis albuminurica, reported at the April and November, 1906, meetings of the society (see OPHTHALMIC RECORD, July, 1906, and January, 1907; reports of the Colorado Ophthalmological Society).

Dr. Edward Jackson read a paper on "The Astigmatic Lens in the Determination of the Amount and Principal Meridians of Astigmia." This paper will be printed in full in the OPHTHALMIC RECORD.

Adjourned. GEORGE F. LIBBY, *Secretary.*

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Meeting Thursday, Feb. 4, 1907.

R. W. Doyne, F.R.C.S., Vice-President, in the chair.

The evening was devoted to the discussion of clinical cases. Mr. Ludford Cooper showed a case of paralysis of the vertical movements of both eyes. The patient was a man in whom there was complete paralysis of the vertical movements of both eyes which had come on suddenly and for which no explanation could be found. Mr. J. H. Fisher had seen two similar cases, one in a girl who was found one morning unconscious with this paralysis. She recovered consciousness rapidly, but the paralysis persisted for a long time. The explanation he then gave was an embolism of one of the small arteries—of the corpus quadrigeminum. The other case showed hemianopic pupil reaction, without a hemianopic field, a condition never before recorded, and postmortem a diffuse growth of the lamina quadrigemina was found.

Mr. A. Stanford Morton showed a case of a man, aged 54, who, two years previously, received a steel foreign body in his right eye. The sight of this was immediately affected. About a month later the sight of the left eye began to fail, and within three months was almost completely blind. Now the right eye showed typical siderosis, with atrophy of the nerve. The left eye showed a similar condition of the disc, the atrophy being of the postneuritic type. There was marked arterial sclerosis in both eyes. The left pupil showed the Argyll-Robertson reaction. No sign of central nervous disease could be found.

Mr. Malcolm L. Hepburn showed a case of a man, aged 61, with polychoria associated with chronic glaucoma. The sight of the right eye had become dim recently, though for the last three years he had noticed colored rings around the lamps; he had had no pain. The left eye was normal in every respect. The right eye showed an unusual appearance of the iris which, he stated, had been present from birth. There was a complete pupil placed down and in, which reacted to light, while the part between the pupil and the periphery was made up of five triangular-shaped bands of pigmented iris tissue, with their bases toward the angle. These bands enclosed clear spaces through any of which the details of the fundus could be plainly seen. In addition to these bands, an almost complete circular stump of pigmented tissue was visible at the angle of the anterior chamber, in which the bases of the different bands were lost. The patient stated that the pupil used to be in the center of the eyeball, but of late years it had gradually come to occupy its present position. The fundus showed glaucomatous cupping of the disc. The case was interesting from a developmental point of view, and two explanatons were possible. One that the iris was originally complete and by subsequent atrophy, as the result of inflammatory action or otherwise, had partially disappeared. The other was a faulty development, which was difficult to understand.

since the pupil was perfectly normal. Mr. Treacher Collins suggested as a possible explanation the failure of the formation of some of the loops of vessels which go to form the iris.

Mr. Warren Tay showed a drawing of an eye from a case of tuberculosis, which was only diagnosed after an ophthalmoscopic examination had been made. This occurred 22 years ago. He showed this in order to disprove the statement of an eminent physician who stated that this had never been done.

Mr. J. H. Tomlinson showed a retinoscopy longarm to facilitate the practice of retinoscopy in children. Mr. Halliburton McMullen showed a case of detachment of the retina cured by scleral punctures. Other cases were shown by Messrs. G. W. Thompson and G. H. Pooley.

Meeting Thursday, March 14, 1907.

Priestly Smith, F.R.C.S., President, in the chair.

Dr. Rockliffe read notes of a case of thrombosis of the cavernous sinus, associated with septic meningitis, which originated from a septic sore on the lip. The patient was a fish dock laborer whose general health, but for bronchitic attacks, had been satisfactory. He was first seen on November 18 last, and had proptosis of the right eye. Five days previously a small spot appeared on the upper lip. He picked it and eventually pricked it with a pin. The lip and face became swollen and he then applied a linseed meal poultice. Four days later he was admitted to the infirmary. He became delirious and a diagnosis of thrombosis of the cavernous sinus was made. Afterward lumbar puncture was done. He died on November 20, being two days after admission and seven days after the spot appeared on the upper lip.

At the autopsy the meninges about the right cavernous sinus were covered with lymph; the right cavernous, the transverse and part of the left cavernous sinus were thrombosed. The orbital tissues on the right side were inflamed and swollen, but there was no pus.

Dr. Rockliffe also read notes of four cases of sympathetic irritation occurring after 18, 22, 28 and 50 years.

In two of these cases a foreign body was found, and the third case probably contained a foreign body, a piece of stone. The injury in the fourth case was a punctured wound. Considerable ossification was present in three of the cases.

Mr. A. R. Brailey read a paper on cysts of the pars ciliaris retinæ. He stated that these structures had frequently been mistaken for sarcomata of the ciliary body clinically, but little was known of their pathology, though their study might throw some light on the secretion of the aqueous. They were found in such a variety of conditions that he was only able to classify them according to their apparent mode of origin. Two changes which played an important part in the origin of some varieties limited to the cells of the unpigmented epithelium were multiplication of the cells and vacuolation of the cell bodies. This proliferation was most frequently found in senile eyes and was commonly associated with hypertrophy of the ciliary processes. The cells of the pigmented layer appeared to play a mere passive rôle, and even in cysts arising by simple detachment of the epithelium it was the unpigmented layer alone which was affected, the adhesion between the pigmented epithelium and the underlying ciliary body being a peculiarly intimate one. The different modes of origin appeared to be: (1) detachment of the non-pigmented epithelium; (2) proliferation of the non-pigmented epithelium cells with the formation of a cavity arising either by simple separations of the cells or by their vacuolation and destruction; (3) proliferation and union of the cells of adjacent processes, leading to a portion of the posterior chamber being shut off from the remainder.

The number of the specimens was too small for him to come to any conclusion as to the relative frequency of these varieties. The contents of the cysts was usually lost during the preparation of the specimen, but when present it consisted of a deeply-staining homogeneous coagulable fluid.

C. Devereaux Marshall.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting April 8, 1907.

Dr. Henry Gradle, Presiding.

A CASE OF SUPERNUMERARY CANALICULUS.

Dr. Willis O. Nance reported a case of supernumerary canaliculus in a man of 30, who complained of bilateral epiphora. There was present a mild chronic catarrhal conjunctivitis, but no history of dacryocystitis, or probing or of other treatment. Two distinct puncta were observed on the left lower eyelid, one in the normal position, the other on the direct marginal line about 4 mm. nearer the inner canthus. Probing and syringing demonstrated two separate and distinct canaliculi which led to the lacrimal sac or to a common duct very near the sac. The epiphora disappeared completely under appropriate treatment.

Dr. Nance found but twenty-two cases of supernumerary canaliculi recorded in the literature. The presence of the extra canaliculis has been said by some to be due to the development of two epithelial in-shoots, instead of one, from the primary duct.

SHRUNKEN SAC AFTER ENUCLEATION.

Dr. Henry Gradle exhibited a man who had been unable to wear an artificial eye after enucleation of an eye wounded by a pistol shot years ago. The cul-de-sac was enlarged and Thiersch flaps engrafted; these did well, but shrunk considerably. He then put in a Krause flap without stitches and packed the orbit with pellets of gauze. This procedure gave satisfactory results, although there was too much narrowness around the internal canthus, which he remedied by Wolff grafts, and the patient now wears an artificial eye with much comfort. Dr. Gradle also presented a case of

TRAUMATIC XEROSIS OF THE CORNEA.

A man in perfect health, about 38 years old, was struck in the left eye by the elbow of a child, four weeks ago. The severe pain had been relieved by hot fomentations. Ten days later Dr. Gradle found a sharply circumscribed punched-out defect on the corneal epithelium over which the smeared secretion of the Meibomian glands collected as an oily scum; boracic acid solution would not moisten the abraded area in the least. No matter what treatment was employed, the effect was practically *nil*. Atropin was continued, dionin used, and nitrate of silver was applied to the hypertrophied ocular conjunctiva with but temporary benefit. Salicylate of soda and subconjunctival injections were ineffectual. Two days later Dr. Gradle scraped the abrasion, which gave the patient more comfort than he had before. The material removed showed the xerosis bacilli, epithelial cells, and some cells with granules that stained with methylene blue; it could not be determined whether or not these were plasma cells. The nasal corner of the abrasion is healing, but otherwise the lesion is unchanged. He curetted again this morning, and where he passed beyond the edge of the abrasion healing took place five hours after the operation. The floor of the abrasion looks the same as before.

MOTAIS' OPERATION.

Dr. Oscar Dodd exhibited a patient and photographs taken before and after a comparatively satisfactory Motais' operation for aggravated ptosis.

CORNEAL TUBERCULOSIS SUCCESSFULLY TREATED BY TUBERCULIN OPSONIC INDEX CONTROL.

Dr. Oscar Dodd exhibited this patient, a girl of 14. Six months ago there had appeared a marked episcleral swelling bordering the nasal half of the cornea and infiltration and vascularization of the adjacent cornea. The condition was diagnosed as phlyctenular conjunctivitis, but got worse under the usual treatment; the conjunctival swelling then resolved under iodids and mercurials, but the corneal infiltration had increased to pin-head sized stroma nodules of yellowish white color. The opsonic index for the tubercle bacillus was examined and found to be 8.91, 8.69 and 9.2 respectively on three occasions in comparison with a normal 10. A diagnostic injection of 5 mg. of old tuberculin gave a typical general and a very marked local reaction lasting several days, and evidenced by the appearance of new and larger nodes and the obscuration of the smaller ones by increased infiltration.

Examination of the lungs was negative, but during the height of the reaction from the tuberculin there were marked râles in the upper right apex, and marked inspiratory prolongation.

A month later (Feb. 8, 1907) the opsonic index was 10.1; injection of 0.5 c.c. of Koch's new tuberculin produced some local but no general reaction. February 11 the opsonic index was 9.3, and on the 13th 11. On February 14 she was given two-thirds c.c. of new tuberculin, and on the 16th the opsonic index was 8.4. There was considerable local reaction. On February 18 the index was 12.2. She was given 0.5 c.c. of tuberculin, and on the 20th the index was 10.1; 11.6 on the 22d. Another injection was given on the 22d, and one on the 25th, when the index went up to 15. Since that time it has varied from 12 to 15. The last injection was given March 22d. The corneal infiltration has disappeared, the spots being almost invisible. The general health of the patient has improved very much. The eye is quiet, and the vision 6/6.

CONJUNCTIVAL TUBERCULOSIS.

Dr. Oscar Dodd. The conjunctival condition in this case closely resembled trachoma except in that the inflammation of the upper palpebral conjunctiva extended forward in front of the tarsus across the sulcus subtarsalis and to the very edge of the line formed by ducts of the Meibomian glands.

AN ORBITAL TUMOR OF TEN YEARS STANDING. ENDOTHELIOMA.

(Kroenlein Operation.)

Dr. C. A. Leenheer. (Entrance Thesis.) Dr. Leenheer presented this patient, a woman of 34, with photographs taken at various periods during the past ten years, before and after operation, along with microscopic specimens and three photomicrographs.

The patient gives a history of protrusion of the eye noted ten years ago, at which time she refused to have the eye removed; the protrusion of the eye increased during the subsequent three years, at which time the same advice was again given and again refused. She came in September, 1904, at which time L. found the following conditions:

Left eye blind and protruding three-fourths of an inch; bulb well covered by the lids; divergent strabismus; vessels of the eye and lid engorged. The disc is best seen by a + 4.

There is no palpable tumor in the orbit and a skiagraph shows no overgrowth of the bony structures. Transillumination of the frontal sinuses is negative. There is no history of syphilis and anti-syphilitic treatment proved of no avail.

March 15, 1905, a Kroenlein operation was performed by Dr. Schroeder. A tumor was found completely filling the muscle crater behind the bulb; the same had to be removed piecemeal; healing followed.

At the present time there is evidence of a return of the tumor.

Anatomical examination of the specimens at Prof. Zeit's showed numerous firm, irregular tumor masses; one piece had taken the shape of the posterior portion of the muscle funnel, and as such was studiéd *in toto*. The combined weight of the tumor was 8.53 grams. Microscopic study showed lymph-angio-endothelioma-perivascularis.

Dr. Leenheer then gave an extended review of the Kroenlein operation and the literature of endothelioma, and closed with the following conclusions:

1. The pathologists differ very much as to classification of endotheliomata, but agree that they are derived from the endothelial lymph spaces and blood vessels and that endotheliomata should be classed under sarcomas. They are of slow growth and do not form metastases.

2. The case reported in this article upholds this opinion.

3. In most of the cases reported as endotheliomata in the literature the authors do not go into the microscopical findings. If all the orbital growths were examined microscopically more endotheliomata would be found. E. V. L. Brown, *Secretary.*

ST. LOUIS MEDICAL SOCIETY—THE OPHTHALMIC SECTION.

Meeting March 13, 1907.

DR. CARL BARCK, Chairman, Presiding.

Dr. John Green, Jr., presented a patient with "Sclerosing Keratitis." The sclera contiguous to the lower corneal limbus was slightly elevated and of a violaceous tint. The cornea adjacent was the seat of a crescentic grayish infiltration. Under sodium salicylate, gr. 15 ter die internally and local applications of heat, the corneal infiltration cleared below and the scleral swelling subsided. Recently the process had extended to the outer limbus.

Dr. Carl Barck presented two specimens of leukosarcoma of the chorioid. Recent writers have denied the existence of leukosarcomata, but the term should be retained, if only to indicate the macroscopic appearance of these tumors. The larger tumor was apparently intraocular, though there was a small black spot just outside the sclera, which was probably a metastasis. In the sclera itself were a couple of small islands, indicating invasion of this coat.

Dr. Meyer Wiener reported a case of steel imbedded in the sclera just above the entrance of the optic nerve. The point of entrance was 2 mm. above the upper corneo-scleral margin. He had divided the superior rectus and brought the large magnet in contact with the wound, but failed to extract the steel. He asked for suggestions as to the procedure next to be tried. In the discussion Dr. J. Ellis Jennings said that an inflammatory exudate surrounding the foreign body might prevent its removal by the large magnet. He thought a small magnet might be more successful. Dr. A. Alt believed that if the large magnet had failed the small would fail also. Dr. J. M. Ball recalled a case in which the foreign body was dislodged only at the eleventh application of the giant magnet. Dr. Barck believed that the division of the superior rectus was entirely unnecessary, as the foreign body could be approached through an incision to one side of this muscle. In some cases he had been successful with the small magnet after failure with the large.

Dr. J. Ellis Jennings reported a case of excavation of the optic disc, of such unusual size as to closely approach the pathological.

The patient, a married woman, aged 32, complained of headache and eyestrain.

Refraction: R. 5/7.5 + 1.75 sph. + 0.50 cyl. ax. 150 V. = 5/5.
L. 5/12 + 3.25 sph. + 0.75 cyl. ax. 120 V. = 5/6.

Tension and field of vision normal.

Ophthalmoscopic Examination.—There was a very deep excavation of the nerve head of both eyes, more pronounced in the right. The excavation was complete, except for a narrow edge of nerve tissue on the nasal side and above. This narrow strip was pierced above by the temporal and nasal arteries. All the other vessels, save one, rounded over the edge of the cup and disappeared to view, reappearing again at the bottom in hazy outline, as in glaucoma. The important exception was the lower temporal vein which came directly forward from the center of the excavation, thus indicating in a positive manner that the excavation was not the result of pressure.

Dr. J. Ellis Jennings also reported a case of congenital downward and outward displacement of the lens in a young woman, aged 19. The refraction through the lens was — 35.00 sph., and through the aphakic portion of the pupil 11.00 sph.

Vision with — 30.00 sph. = 15/70 in each eye.

Vision with + 11.00 sph. 15/20, 4 letters in each eye. Previously she had been wearing — 20.00 sph., but now is wearing 11.00 sph. with great comfort and satisfaction.

Dr. J. C. Buckwalter alluded to a case of inward and upward dislocation of both lenses. It had been stated that individuals with congenital dislocation of the lens are frequently the offspring of consanguineous marriages. In the case referred to, consanguinity was denied. Dr. F. L. Henderson inquired why congenital dislocation downward was rare. It would seem that this form would be the most natural. Dr. Carl Barck stated that the explanation was a developmental one, depending on a delayed or faulty closure of the fetal cleft, which, together with the failure of the suspensory ligament at this point would cause the lens to be dislocated upward.

Dr. F. L. Henderson reported a case of thrombosis of the cavernous sinus.

The patient, aged 29, was the unmarried daughter of a physician. She had been afflicted for a year with recurrent furuncles. May 8, 1905, a small boil appeared on the right side of the nose. This was quickly followed by erysipelas around the right eye—proptosis chemosis and rise of temperature to 103 degrees. The temperature and pulse remained up throughout the attack, manifesting a tendency to sudden and radical fluctuations. The author was consulted May 12. May 13 the orbit was incised deeply in three places, but no pus was discovered. May 14 there was pain in the back of the neck on the right side. May 16 definite swelling of neck back of right ear. May 17 patient manifested apprehension and nervousness. May 19 neck and face swollen. Patient in semi-stupor. Operation on cavernous sinus advised. May 21 delirious at night. May 22 began to spit up blood and pus. May 26 pus began to discharge from small opening back of right ear. Mastoid operation done. Lateral sinus opened. May 29 free discharge of pus from inner angle of orbit. Antistreptococcus serum injected. May 30 temperature 107. Death. The postmortem revealed thrombosis of the cavernous lateral and inferior petrosal sinuses and a clot in the jugular extending one-half its length. A probe introduced into the jugular foramen passes downward and forward, following a pus channel directly into the naso-pharynx, thus explaining the dribbling of pus into the throat. The following are the interesting features presented by the case:

1. Life was prolonged much beyond the period averaged by other reported cases. This was probably due to the drainage established by the openings through the mastoid and pharynx.

2. Thrombosis of one cavernous sinus is usually followed quickly by thrombosis of its fellow, owing to the intimate connection through the circular and transverse sinuses. In this case the left cavernous sinus was never involved, although all the basal sinuses of the right side were full of pus.

3. The edema of the lids and proptosis decreased after the first few days, although the gravity of the general condition gradually increased.

4. Twenty days after the beginning of the orbital cellulitis pus voluntarily escaped from the orbit, though deep incisions and repeated probing had failed to release any before that time.

5. Though the basal sinuses were full of pus for days, it worked its way through the posterior pharangeal wall instead of through the dura into the brain.

6. The presence of an abscess in the sclera, which the author believes to be a very rare phenomenon.

Twenty physicians were consulted during the progress of the case.

The author calls attention to the fact that suspicion of thrombosis of the cavernous sinus should be aroused when thorough incision of the orbit produces no pus.

In the discussion, Dr. A. Alt said that the eye was removed so long after death that it did not harden or stain well. There was a large abscess in the sclera near the optic nerve. Dr. Alt had never encountered a scleral abscess and believed it had not hitherto been described. Dr. J. W. Charles stated that the degree of exophthalmos depended on the preservation of the communication between the cavernous sinus and the ophthalmic vein. If this is occluded, the exophthalmos is greater. Dr. A. E. Ewing inquired whether enucleation would be of any value. Dr. Alt thought that enucleation could hardly be performed in time to prevent infection from the orbital tissues to the adjacent cavities.

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

The title of the article by Dr. John E. Weeks in the April number of THE RECORD should read, "A Case of Endothelioma of the Chorioid."

The staff of the Wills Eye Hospital, Eighteenth and Race Sts., Philadelphia, will hold a special clinic for the benefit of delegates and visitors to the meeting of the American Medical Association on Monday, June 3, at 2 o'clock.

GEORGE G. WHEELOCK, M.D., formerly trustee of the New York Institution for the Blind, is dead, at the age of 68.

PROF. DR. LEOPOLD HEINE, privatdozent at the University of Breslau, has been called to succeed Prof. Dr. O. Schirmer, at Griefswald.

DR. SUMNER, formerly resident physician at the California State Prison, resigned to take up the practice of eye, ear, nose and throat. He intends taking post-graduate courses in New York and Philadelphia.

DR. FREDERICK E. FRANCHERE has been elected president of the board of trustees of the Sioux City College of Medicine. Dr. Franchere is professor of diseases of the eye, ear, nose and throat on the college faculty.

IT IS probable that Prof. Dr. Emil Krückman, who is now acting first assistant in Sattler's clinic in Leipzig, will be called to take the place made vacant in the Albertus University in Königsberg by the resignation of Prof. Dr. Herman Kuhnt.

AT THE Boston Medical Library meeting, held February 13, 1907, the evening was given up to a symposium upon the subject of the medical supervision of school children. Dr. S. C. Badger, in his committee report on the conditions found in the first three grades, stated that of the 1,275 pupils whose eyes were examined, 10 per cent. are wearing glasses and, in general, are in good health and doing well.

THE New York Board of Education recently discussed the advisability of furnishing glasses to those school children with defective vision whose parents were unable to pay for the necessary glasses. It was stated that 36,000 children in the schools had defective vision, the majority of whom were too poor to buy glasses. A resolution to provide $30,000 for furnishing eye-testing apparatus, rooms and glasses was held over until the next meeting.

OCULAR AFFECTIONS SECONDARY TO SYPHILIS.—R. Brunson, Hot Springs, Ark. (*Journal A. M. A.*, April 6), reviews the ocular disorders secondary to syphilis, their frequency, diagnosis, etc., taking them up in order from without inward. Syphilitic ulcer of the eyelid may occur from the breaking down of a gumma in the skin, cartilage or subcutaneous tissue. It is most common in the skin near the lid margin, though it may occur on the conjunctival surface. It is usually a late lesion and should be considered as a tertiary symptom. Sometimes there may be difficulty in distinguishing it from epithelioma. The conjunctiva is rarely affected primarily, but becomes involved when the iris and ciliary body are affected, the edema seen in these cases being due to obstruction to the return flow of the circulation. Brunson has seen one case of gumma, but none of mucous patch, though they were carefully searched for. The lacrimal sac and duct are frequently involved through the nose. Interstitial keratitis is syphilitic in origin in perhaps 60 per cent. or more of all cases, and the true form is always hereditary. He has always found small doses of mercury to give very satisfactory results in these cases. The iris and ciliary body are perhaps more often invaded by syphilis than any other part of the globe. About 70 per cent. of all cases are specific. He describes the characteristic features of syphilitic iris, the papules, the broad dark posterior synchiæ, etc. Hereditary syphilitic iritis is usually less severe in its manifestations than the adult type, and is sometimes difficult to recognize for lack of other hereditary symptoms. Syphilitic cyclitis may be plastic, serous or gummatous, and is almost always associated with iritis; the symptoms are pain, diminished vision, precipitates in the vitreous, exudates between the iris and lens capsule and ciliary injection. In many cases the patient attributes it to a slight injury. Opacities of the vitreous are frequently accompaniments of syphilis, apparently like small dust-like particles in the posterior part of the vitreous and can usually be credited to chronic chorioretinitis. Brunson states that syphilitic retinitis does exist; he has observed four cases which he proposes to report in detail in the future. Hemorrhagic retinitis is more common in syphilis, and is usually in the tertiary stage, but relapsing syphilitic central retinitis is very rare. Brunson has seen but one case. Disseminated chorioiditis is caused by syphilis in perhaps 80 per cent of all cases, and may be complicated by iritis, interstitial chorioiditis and scleritis, and liquefaction of the vitreous may occur with partial or complete lens dislocation. Syphilitic chorioretinitis is characterized by the vitreous opacities mentioned and increased redness of the disc, which is margined with a grayish discoloration. There is an absence of the patchy condition of simple chorioidal inflammation and iritis is a common antecedent

RECENT ADDITIONS TO OPHTHALMIC LITERATURE.

Ophthalmologie Microbiologique. By Dr. A. Gabrielides, Constantinople. A. Christidis, Gaiata, Rue Voivoda, No. 96, 1906. Price, $1.00.

Sur l'Histologie et l'Etiologie du Lenticone Posterieur (History and Etiology of Posterior Lenticonus). By André Patry. Geneva: W. Kindig et fils, 1906.

A Text-book of Ophthalmic Operations. By Harold Grimsdale, M.B., F.R.C.S., and Elmore Brewerton, F.R.C.S. Chicago: W. T. Keener & Co., 90 Wabash avenue.

Ueber Augenkrankungen Sexuellen Ursprunges bei Frauen (Eye Diseases of Sexual Origin in Women). By E. Berger and R. Loewy. Wiesbaden: J. F. Bergmann, 1906.

The Pathology of the Eye. By J. Herbert Parsons, B.S., D.Sc. (London), F.R.C.S. (England). Volume III, General Pathology—Part 1. Hodder & Stoughton, publishers, London, England.

La Teoria degli Specchi e delle Lenti, applicata alla diagnosi dei Vizu de Refrazione (The Theory of Mirrors and Lenses as Applied to the Diagnosis of Errors of Refraction). By E. Trombetta, Florence, Italy. Second edition. Nicolai, Florence, 1906.

The Muscles of the Eye. By Lucien Howe, M.A., M.D. In two volumes. Volume I, Anatomy and Physiology, including Instruments for Testing and Methods of Measurement. Illustrated. G. O. Putnam's Sons, New York and London. The Knickerbocker Press.

Compendium of Ophthalmology (Precis d'Ophthalmology). By Dr. V. Morax, Ophthalmologist to the Lariboisiere Hospital, Paris, France. 339 Figures in the Text and 3 Colored Plates. Masson et Cie., Editors, 120 Boulevard Saint-Germain.

A Manual of the Diagnosis and Treatment of the Diseases of the Eye. By Edward Jackson, A.M., M.D. Second edition. Thoroughly revised, with 182 illustrations and two colored plates. Price, $2.50 net. Philadelphia and London: W. B. Saunders Company, 1907.

Psychology Applied to Medicine. By David W. Wells, M.D., of Boston. Illustrated, Nearly 200 Pages with Bibliography and

Index. 12mo., extra quality paper. Neatly bound in cloth. Price, $1.50 net. F. A. Davis Company, Medical Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

Die Neurologie des Auges.—Ein Handbuch für Nerven und Augen Arzte. (The Neurology of the Eyes. A Reference Book for Neurologists and Ophthalmologists). By Dr. H. Wilbrand and Dr. A. Saenger. Second half of third volume. General diagnoses and symptomatologie of visual disturbances. With many illustrations in text and six plates.

In this connection it may be well to again call attention to an American work on this subject which appeared recently, i. e., the Posey-Spiller work on the eye and nervous system. This book is admittedly the best printed in the English language. It is entitled The Eye and Nervous System, Their Diagnostic Relations, by Various Authors. Edited by Wm. Campbell Posey, A.B., M.D., and William G. Spiller, M.D. Illustrated. J. B. Lippincott Company, Philadelphia and London. $6.00.

Eye Injuries and Their Treatment. By A. Maitland Ramsay. Contents: Chapters I and II, Introductory Superficial Injuries; III, Wounds and Burns of the Conjunctiva; IV, Serpiginous Ulcer of the Cornea; V and VI, Contusion Injuries and Penetrating Wounds; VII. Penetrating Wounds Retaining a Foreign Body; VIII, Injuries to Eye from Dynamite Explosions; IX and X, Sympathetic Ophthalmic and Ocular Therapeutics; XI, General Directions Regarding Operations on Eye. Pharmaeopeia in Use at the Glasgow Ophthalmic Institution. One volume of 250 pages, with twenty-five full-page plates. Photogravure i nColor. Cloth, $6.00 net, prepaid. W. T. Keener & Co.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

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Original Articles.

PRIMARY MELANOTIC SPINDLE-CELL SARCOMA OF THE CORNEAL LIMBUS.*

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PHILADELPHIA.

[Illustrated.]

All tumors having their origin in the corneal limbus are of comparatively infrequent occurrence, but this is especially true of sarcomata. According to Parsons.[1] the first case of primary sarcoma of the limbus was reported by Baumgarten in 1852. In 1879 Noyes[2] collected "127 cases of tumors growing from the front of the globe and from the lids," a few being sarcomata of the limbus, but, as pointed out by Wadsworth and Verhoeff,[3] no close distinction was drawn between the cases of sarcomata and epitheliomata.

Clegg and Hall,[4] in discussing the rarity of this condition, state that only three cases were observed in an examination of 520,523 out-patients at the Manchester Royal Eye Clinic.

Recently Verhoeff and Loring[5] have discussed the matter at some length, reviewing and analyzing the previously recorded cases and arriving at conclusions somewhat different from many of the preceding writers. Altogether they found in the literature about eighty undoubted cases, and in searching the records of the Massachusetts Charitable Eye and Ear Infirmary they found only two cases among 44,719 patients. It is thus seen that the condition is quite rare, and inasmuch as there is still some question as to the manner of extension of these growths and as to their malignancy and consequent treatment, it is worth while to record each individual case.

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*Read at the Forty-third Annual Meeting of the American Ophthalmological Society, 1907.

[1] Pathology of the Eye, vol. i, p. 138.

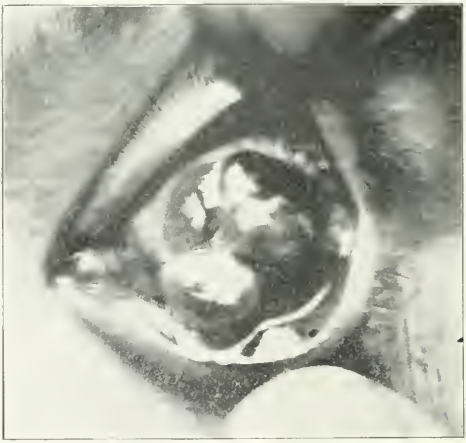
[2] Archives of Ophthalmology, vol. viii, 1879, p. 145.

[3] Trans. Amer. Oph. Soc., vol. ix, p. 281.

[4] Lancet, Sept. 10, 1904.

[5] Archives of Ophthalmology, vol. xxxii, 1903.

W. B., male, aged 47 years, presented himself at the dispensary of the Methodist Episcopal Hospital Oct. 23, 1906, for advice concerning a growth on his left eyeball. According to his statement there had been a small brownish spot just to the temporal side of the corneoscleral junction for about twelve years, but it had never given any trouble or increased in size until recently. Seven weeks before he came for advice it had commenced to grow, and the progress had been extremely rapid. At the time of the examination the following conditions were noted:



There were two growths, or one large growth with two lobules, covering about two-thirds of the corneal surface. The upper and larger, irregularly ovoid in shape, was 11 mm. long, 10 mm. wide, elevated 5 mm. above the normal corneal surface and extended 1.5 mm. beyond the corneal limbus on the sclera. It was not mobile, was firmly attached to the underlying ocular structures and overlying conjunctiva, possessed no undermining edge, and was dark brown in color, some portions being more intensely pigmented than others. The lower and smaller growth, or lobule, was almost horizontally oval, 10 mm. long, 6 mm. wide, elevated above the corneal surface 5 mm. and its color a light pinkish hue. The apex was ulcerated and bled on the least manipulation. Looking at it directly from in front the corneal limbus, if projected forward, would have divided it into two almost equal parts, about as much of the growth resting on the cornea as on the sclera. Like the upper portion, it was firmly attached and non-mobile. The ocular conjunctiva, which passed in thickened folds to the point of juncture between the two lobules and completely covered the small intervening portion of the cornea, had apparently assumed this position as the growth had increased in size, thus putting the conjunctiva upon the stretch. A small portion of the pupil and approximately one-third of the cornea remained uncovered, the latter being clear and apparently unaffected in any way. The iris was of good color and appearance, the anterior chamber unaffected, the pupillary reactions prompt and the fundus normal so far as could be ascertained through the small amount of pupillary space available. For a few weeks there had been some secretion, and during the last few days some difficulty in closing the lids.

No family history of tumors of any kind could be elicited.

The growth was thought to be a melanotic sarcoma and enucleation was advised. The advice was accepted and the operation performed two days later, the eyeball being placed at once in a 2.5 per cent. solution of formalin and submitted to Dr. C. M. Hosmer for examination and report. There has been no recurrence up to the present time.

Macroscopic Examination.—Occupying the inferior temporal quadrant of the cornea is a deeply pigmented triangular wedge-shaped tumor. The base of this triangular growth lies upon the sclera, its apex being opposite the center of the pupil, upon the cornea. It is equilateral, the sides being 10 mm. in length. Slightly above its apex it is 5 mm., and at the limbus 1 mm. in thickness. The outer edge overlaps very slightly the corneal limbus. Occupying a portion of the lower half of the cornea is a flattened, ovoid, and, in the main, non-pigmented growth. Its long axis is 10 mm., and it is 5 mm. in width and 5 mm. in thickness. It is about equally situated upon the cornea and sclera. The upper and lower tumors are apparently in contact opposite the center of the cornea and at this point some pigmentation of the inferior growth is observed. The upper nasal quadrant of the cornea is clear, an apparently normal anterior chamber and iris being visible. The lower temporal quadrant upon which the two growths encroach to some extent is otherwise occupied by thickened conjunctival tissue. The measurements of the eyeball are normal and, excepting the portion described, no other part seems to be affected.

Histologic Examination.—After fixing in formalin the eye was frozen and bisected in a plane passing about 10° to the temporal side of the upper end of the vertical meridian, through the center of the base of the upper, and obliquely through the lower growth, and through the optic nerve posteriorly. The plane of bisection leaves a small pupil in the nasal half. The temporal half was embedded in celloidin for microscopic examination; the nasal half preserved as a gross mount.

Examination of the section shows the cornea to be overlaid by a superior pigmented and an inferior relatively non-pigmented tumor, the two being in contact opposite the center of the cornea. The pericorneal tissues in the neighborhood of the upper growth (a space included between imaginary lines passing forward from the periphery to Bowman's membrane and from points opposite the root of the iris) are densely infiltrated with tumor and inflammatory cells—a condition believed to indicate an advancing local metastasis of the contiguous neoplasm. The advancing margin shows an attempted walling-off with lymphocytes. The foremost (possibly youngest) of the advancing neoplasmic cells in this location and as seen infiltrating the superficial corneal layers, have a relatively large, globular to ovoid, faintly staining nucleus with a prominent nucleolus, the protoplasm being finely granular and without distinct cell wall. The cells in the periphery of this infiltrating mass have a tendency to arrange themselves in solid globular or cylindrical masses in preformed spaces or alveoli formed by older and more fully developed spindle cells. The more densely packed cells of the central portion are of a short spindle type. Within this mass three large islands of closely packed lymphocytes are seen, the largest being opposite the beginning of Bowman's membrane and apparently attempting to limit the extension of the more definitely structured superior tumor. The sub-epithelial layers of cells show collections of pigment, apparently within the cells—small or not fully pigmented chromatophores. The most superficial layers of the sclera at the beginning of Bowman's membrane are separated and carried forward into the growth. Over this portion the epithelium, in the main, has disappeared; some remaining cells of the deeper layers show edema, irregularity of placement, individual degeneration and occasional infiltration with tumor cells and pigment. The episcleral tissues are edematous and show a small number of inflammatory cells (lymphocytes most frequently) in and about the vessels, with quite numerous eosinophiles.

Sections of the superior tumor proper show an irregular reticular structure. Strands of large brown cells (not fully pigmented, swollen chromatophores) divide the surface into larger and smaller spaces. Assisting in the formation of, and further reduction of, these spaces are interlacing strands of spindle tumor cells. Scattered throughout are small masses of dark pigment. A fairly broad arc of these brown cells with an inner layer of more deeply stained pigmented cells arches over the tumor and divides it, in a measure, from the above described pericorneal portion and from its lower end, which is in contact with the inferior growth. Subdividing this arc-enclosed area again into an upper and lower portion is a broad openwork band of deeply pigmented cells extending from the epithelium to Bowman's membrane. The lower part presents the reticular structure above referred to and the upper contains also islands of lymphocytic accumulations. The upper and lower extremities and the portion immediately overlying Bowman's membrane are deeply pigmented. Bowman's membrane at its upper extremity is overlaid by a new formation of fully developed connective tissue. Below this point there are breaks in its continuity and numerous infiltrations and elevations by pigmented tumor cells. Overlying the tumor are seen remains of deeper epithelial cells much infiltrated with tumor cells. At its lower portion the upper tumor is flattened and is in contact with the inferior tumor, the latter being pigmented only at the place of contact.

The lower growth is composed of densely packed small spindle cells in its deeper portion overlying the cornea but showing a delicate lace-like structure beneath the epithelium. As stated above, it is non-pigmented except at the point of contact with the upper growth. It involves the periphery of the cornea somewhat more deeply than the upper tumor and is covered by a thinned, in places necrotic, but apparently uninvolved epithelium. There is no infiltration of sub-epithelial tissues at its margin, but a few small islands of lymphocytes are observed.

In the depth of the tumors, definite patulous blood vessels are infrequently observed. More are noted in the lower than in the upper growth, and here also we find occasionally blood vessels with coagulated contents. Thin-walled vessels in the periphery are fairly frequent in each.

On Descemet's membrane there is a small amount of finely granular matter, and in the interstices of the pectinate ligament free pigment granules and a few pigment-bearing cells are observed.

Some sections show a very slight round-cell infiltration in the ciliary body near the root of the iris. In one section a localized collection of immature connective tissue cells is distinctly observed in the most anterior layers of the iris and similarly situated, in several sections, are noted groups of closely massed pigmented cells —probably melanomata. In other respects the eye appears to be normal.

It would seem, therefore, that the condition was undoubtedly spindle-cell sarcomata, with a secondary similar growth or a connective tissue rest in the iris, the upper growth being pigmented, the lower, in the main, non-pigmented.

REMARKS.

Most ophthalmic surgeons who have recorded cases of sarcomata of the corneal limbus agree that they usually arise in the more exposed portion (palpebral aperture), are occasionally multiple, usually pigmented (according to Verhoeff and Loring 12 non-pigmented, 22 with small amount of pigment and 39 markedly pigmented) and are most frequently observed in patients past middle life (average 51 years).

The base of the growth is usually small, even though the growth itself be quite large, so that it may overlie a large portion of the cornea without being adherent to it. This, however, was not true in the case just reported, the base being almost as large as the growth itself and firmly adherent to the underlying structures. As the tumor extends it does so superficially, having but little tendency to invade the sclera or deeper layers of the cornea. It may, however, extend by way of the perivascular canals of the ciliary body or may even perforate the sclera directly. It takes about a year to become the size of a pea or bean (Parsons), though in my own case the growth did not seem to start to increase in size until a few weeks before the eye was enucleated. In many cases a small spot is present for years and suddenly undergoes rapid growth and extension.

Whether an attempt should be made to remove such tumors by abscission or to advise immediate enucleation is a question concerning which there is difference of opinion. That some of the tumors grow slowly, that there is but little tendency to involve the sclera or deeper layers of the cornea, that when they recur they usually recur locally, that there is but little tendency to extend by matastasis, are offered by some surgeons as reasons for an attempt at removal by abscission. On the other hand, as some cases do grow rapidly and involve the deeper layers of the cornea and sclera, even to perforation, as very many cases repeatedly recur, sometimes recurring at distant points, and finally have to be enucleated, as there are occasional metastases to other portions of the body, the patients' lives being lost, it is urged by other surgeons that enucleation should be advised as soon as the diagnosis is made. In discussing a case reported by Jessop,[6] Tweedy stated that the earlier enucleation is performed the better. Nettleship believed first in cauterization with enucleation at the end of a fortnight if the wound assumed an equivocal appearance. According to Parsons, if the growth starts in a mole it is not so malignant as one which begins in the pigmented cells of the sub-epithelial tissue, and also that very rapid growths are of the latter type; therefore, an examination of the tissues might modify the treatment as suggesting abscission rather than immediate enucleation.

Verhoeff and Loring,[7] however, after analyzing carefully all the recorded cases, concluded that immediate enucleation was advisable; and unless the growth be seen at a very early stage when it is yet small and not firmly adherent, this seems to the writer the safest and best advice that can be offered the patient.

1831 Chestnut Street.

CASE OF ANGIOSARCOMA OF THE LOWER LID, WITH MICROSCOPIC SLIDE AND PHOTOGRAPH.

J. Herbert Claiborne, M.D.

NEW YORK CITY.

(Illustrated.)

N. S., a strong, healthy country boy, 13 years of age. Two months ago a small red spot appeared in the inner corner of his right eye, growing steadily afterward. Never had any pain.

Status Præsens.—A tumor, size of a small peanut, springs from the cutaneous surface of the lower lid about 1 mm. below the edge of the conjunctiva, between punctum and wall of the nose. It is pedunculated, the peduncle being more or less round and measuring about 3 mm. in thickness. The tumor is corrugated, reddish-black, bleeds easily on touch. It rests on the lower lid and nose. There is a mild conjunctivitis; vision normal, with correction of a slight myopic astigmatism. Fundus normal. The other eye is normal.

The boy had never had any other evidences of tumors about him, and his family history is practically negative. The grandmother died of some stomach trouble, which his uncle thought was cancer.

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[6] Trans. Oph. Soc. U. K., 1904.

[7] Loc. Cit.

The diagnosis of angioma was made and abscission was proposed. The operation was done without anesthesia. When the tumor was grasped with the forceps it bled freely and a part of it came away. The rest was cut off with scissors, pressed closely to the origin of the peduncle. Owing to the nervousness of the boy, a slight stump was left, from which the arterial blood flowed freely in spurts. The bleeding was persistent, lasting half an hour. It was finally checked with hot water and pressure, and the remaining stump was apparently removed. The hemorrhage recurred quite as freely and persistently. The same measures succeeded in stanching it.

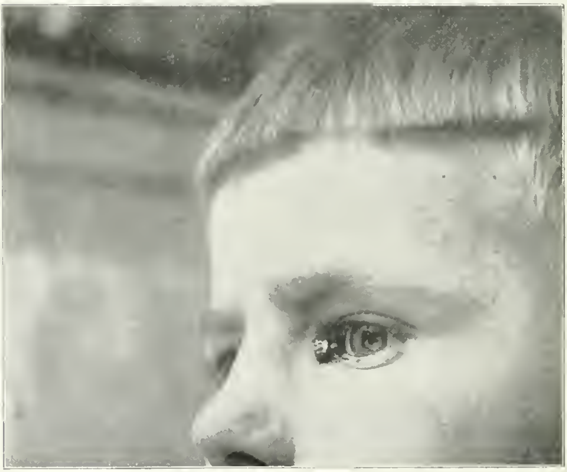

Figure 1

The boy was put to bed with an aseptic bandage on the eye. This was removed in 24 hours, when it was seen that a part of the pedicle still remained. In two days this had grown and was with difficulty snipped off. The bleeding recurred, but not so severely, and was easily stopped. I saw him at intervals of a week for about a month and it was observed that the tumor was sprouting again. In the meantime a histological examination had been made, and the tumor was found to be an angiosarcoma.

I then gave the boy ether, and with the actual cautery completely destroyed the area from which the pedicle grew. The cautery was applied not only to the area, but was thrust deep down into the tissues, so that a distinct hole was made. At the end of two weeks it had heeled as a white scar. I suggested that he return at the first sign of recurrence. The following is the histological report of Dr. E. B. Coburn:

The tumor submitted for examination measures 2 mm. by 5 mm. After the usual preparation, the specimen shows the following microscopical appearance: The tumor is covered by epithelium arranged in three characteristic layers—an outer one, of horny squamous cells; an inner one, of cylindrical cells, and several intermediate layers of irregular-shaped cells. The inner layer is flat and presents no digitations. At one point the tumor is denuded of epithelium and covered with blood, which is continuous with the blood spaces in the tumor.

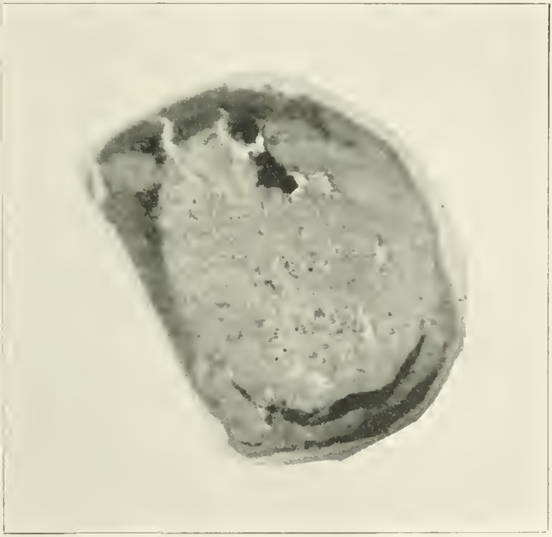

Figure 2.

The tumor is composed of a small amount of connective tissue, with large round and fusiform cells close together and with some small round-celled infiltration. The growth is quite vascular, the walls of the vessels being very thin with only a single layer of cells.

and in many cases it is quite impossible to detect any cell wall surrounding the blood cells.

The pathological diagnosis is angiosarcoma.

Angiosarcoma in other parts of the body is not rare, but I believe this is the first case in which it has occurred in the eye.

Fehr, in *Archiv. für Ophthal.*, xliv, 1897, p. 661, has collated 16 cases of angioma of the conjunctiva. In 14 cases the tumor sprang from the bulbar conjunctiva, in 9 in proximity to the internal angle, and in 5 in proximity to the corneal limbus. In 2 cases it sprang from the fornix.

Carlini, in the *Annali di Ottalmologia*, 1905, p. 396, has described a case of angioma which sprang from the mucous surface of the upper lid, about its outer third. This case is interesting and similar to mine in similar respects.

A child had, two years previously, a small angioma on brow, which had not recurred after removal. The tumor bled freely when the eye was rubbed. It was cut away, but began to grow again in five days, and at the end of two weeks was as large as before. The patient was taken to the hospital one night when there was considerable bleeding. An attempt was made to check the bleeding and the tumor came away through the manipulation. A few days later a new growth appeared, but was much smaller; this was removed and did not reappear. Both the original and the last tumor were examined. There was found "a delicate framework of connective spindle-shaped cells, with numerous blood vessels embryonal in character. There was no connective tissue." (*Practical Medical Series*, 1906, page 116.)

Carlina remarks that the growth of such cases is months or years, but in his case the tumor developed rapidly and returned three times.

In my case the tumor developed in two months, and, though it was not permitted to grow again to any extent, it is probable it would have grown to its original proportions had it been allowed to do so. The sarcomatous character of it determined me in using the actual cautery and in thrusting the glowing iron deep down into the subcutaneous tissue. The final result was excellent. A small white scar remained, and the conjunctival edge was unaltered.

This case is interesting in several respects: 1. Its appearance without a precursor in any other portion of the body. 2. Its rapid development. 3. Its spouting artery which supplied the base. 4. Its attempted recurrence. 5. Its mixed character—angiosarcoma. 6. Its position on the skin, just outside the conjunctival edge. 7. Its thorough eradication by the actual cautery.

34 West Thirty-sixth Street.

THE UNILATERAL FORM OF TARSO-PALPEBRAL VERNAL CONJUNCTIVITIS OCCURRING IN A YOUNG GIRL.*

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CHICAGO.

(Illustrated.)

The comparative rarity of this disease, especially in the form above classified, is the writer's excuse for presenting an example of it. It may be recalled, from Posey's collective investigations in 1903, reported to the Ophthalmic Section,[1] that he believed less than 7 per cent. of all cases are confined to one eye.

G. D., aged 11, was referred to me March 11, 1907, by Dr. E. E. Clark, of Danville, Ill., in the hope of being able to relieve the annoying symptoms she had complained of for some years past.

The patient is a healthy girl (one of four children) furnishing an excellent family record, with no history of hereditary disease or of serious eye troubles in the family.

When 3 years of age she began to look closely at letters, etc., and it was noticed that the left eye turned in slightly. Dr. Clark gave her glasses later and the eyes became straight. In the spring of 1903 her eyes were inflamed, especially on warm days, and, as the summer progressed, she had discharge from the left one, associated with itching, headache and vertigo. During each subsequent spring and summer the itching has been very pronounced, accompanied by thread-like discharges from the left eye. There were some slight symptoms in the right eye, but nothing to speak of. It was not until last fall that horny growths were noticed on the left upper lid. During last summer and autumn, in addition to the symptoms just mentioned, the left eye began to water excessively, so that it was necessary to wipe away the secretion frequently. The patient is able to read indefinitely. Quite recently the eyes have itched, smarted and burned when exposed to wind. For the past year or two the left upper lid has drooped, giving the patient a sleepy appearance. Dr. Clark removed the growths from the left upper lid December, 1906, but they have recurred. The patient has, in addition to expression and other methods of removing parts of the outgrowth, been treated by sulphate of copper, powders and drops. Her vision 20/70 minus, and Jaeger 1, left; 20/15 minus, and Jaeger 1, right.

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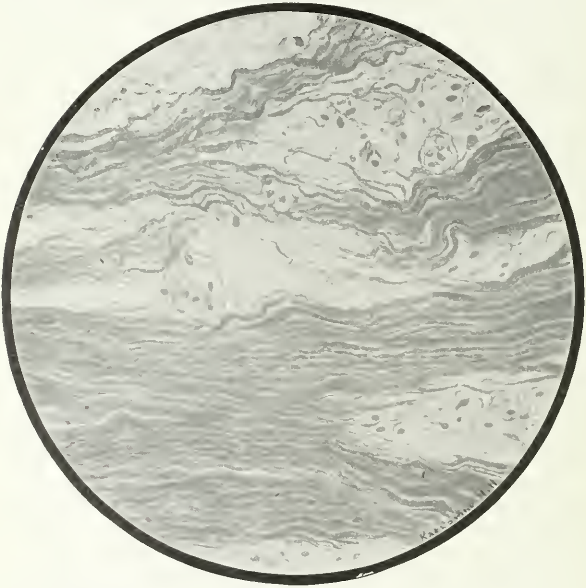
* Read before the Chicago Ophthalmological Society, May 13, 1907.

[1] Wm. Campbell Posey, "Vernal Conjunctivitis," Journal American Medical Association, July 25, 1903.

There is marked ptosis on the left side, the upper lid margin covering nearly the superior half of the cornea. The cilia, instead of showing the usual outward and upward curves, point downward and almost touch the margin of the lower lid. This condition is probably due to the bulging of the middle third of the upper lid (plainly seen externally), which also obliterates the usual external, midpalpebral groove. There is a slight purplish discoloration of the upper lid, especially near its margin. On everting the lid almost the entire conjunctival surface is occupied by irregular, roughly polygonal, partly pedunculated, flat-topped masses of hardened tissue. They are distinctly separated by sulci which extend to the altered conjunctiva beneath and are in some instances 2 mm. deep. The larger blocks of tissue are chiefly found about the upper margin of the tarsus. There is very little secretion, but a milk white membrane, sometimes seen as stringy shreds, covers the diseased surface and is easily removed without producing hemorrhage. The con-



Dr. Casey Wood's case of unilateral palpebral vernal catarrh. Section of hyperplastic papule stained by Wiegert's method to show the elastic tissue. (Pen and ink drawing.)

junctiva on the surface of the upper lid looks as if a thick exudate had taken place into its substance and as if this deposit has been subsequently divided into tesselated blocks, covered with mostly smooth, but sometimes slightly villous surfaces. There are no deposits on the bulbar conjunctiva, although the upper sixth of the

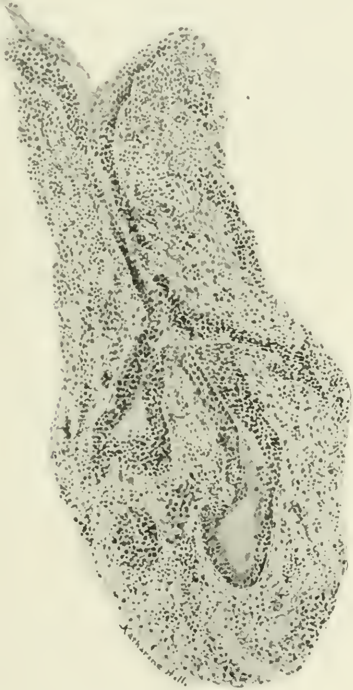


Fig. Casey Wood's case of palpebral vernal catarrh, showing trifoliate epithelial growths. (Pen and ink drawing.)

cornea is invaded by a number of new vessels that to some extent simulate the vascular pannus of trachoma. The neovascular supply is quite superficial and does not extend more than 2 or 3 mm. into the clear cornea. The contour of the blood vessels is not obscured by the faintly gray opacity that surrounds them. There is evident epiphora, and, as the upper punctum is held away from the globe by the tarsal masses, it seems as if the lacrimation may be aggravated by this circumstance. The upper sulcus and the folds of transmission are entirely free of the gristly elevations that are attached to the conjunctiva in the tarsal region. The lower palpebral conjunctiva and the folds in the lower fornix are hyperemic (perhaps thickened), but there is no exudate into or upon these tissues.

The right eye showed a slight discoloration of the palpebral skin, as well as a hyperemia of the conjunctiva of both lids, but there was no definite lesion of its structures; nothing to indicate the ravages of a past or present spring catarrh.

My colleagues, Dr. Frank Allport and Dr. Thomas A. Woodruff, saw the case with me and agreed in the diagnosis of unilateral vernal conjunctivitis of the tarso-palpebral variety. It was decided to remove the masses of hyperplastic tissue under a general anesthetic and to treat the denuded surface by the *x*-rays, after the plan suggested by Bennett and Starr, of Buffalo, and carried to a successful issue by Frank Allport, of Chicago. The cartilage-like masses were abscised on March 12, 1907, with the aid of knife and scissors, and their bases curetted. The cobblestone masses of removed tissue were submitted to Dr. Thomas L. Dagg, pathologist to St. Luke's Hospital, for examination.

The majority of the anatomical and bacteriological examinations of the diseased products of spring catarrh, as we find them recorded in literature, has been made by ophthalmologists, or by observers working under the guidance of ophthalmologists. In this instance it was thought there might be some virtue in securing the services of a general pathologist who might be allowed to come to his own conclusions without the bias that occasionally influences the deductions of a man familiar with other opinions. The writer is much indebted to Dr. Dagg for his study of the sections, and his report is submitted as follows:

"The tissue shows under the ordinary hematoxylin and eosin stain a chronic hyperplasia of the epithelium and underlying connective tissue. The mucous glands dip down deeply below the surface, and are of the ordinary compound mucous gland type, the epithelial lining of which is absolutely normal both in size and form, with no suggestion of malignancy. In the lumen of the glands is a mucoid-like substance showing that the glands are actively secreting. It is probable that this increased mucous secretion gives the filmy, milky appearance to the conjunctival surface. A striking feature of the growth is seen when a stain is used for elastic tissue. The stroma is then seen to be full of bundles of wavy, elastic fibers permeating the entire connective tissue structures; in some areas extending up between the gland ducts to the epithelial surface. The process is of an inflammatory nature, as indicated by the amount of round-cell infiltration, being most severe near the surface of the submucosa and extending down to the base of the growth. A great many eosinophiles are present, indicating its chronic inflammatory nature. It is well nourished by a good blood supply. Staining of the tissue for organisms by the Gram, Weigert and carbol-fuchsin methods was negative."

In the sections of the abscised tissue presented this evening, you will notice the alterations commonly found[2] in this disease. The masses of dense fibrous or elastic tissue with few cells and the infrequent blood vessels. The superficial epithelium is much hypertrophied, the excessive multiplication of the cells probably causing the milky appearance said to be pathognomonic of the disease. There is an enlargement, certainly an extension, of the normal papillæ of the conjunctiva, associated with invasion of the deeper conjunctival tissue by tongue-like projections and nests of epithelium; in the latter case not unlike true epithelium. The differential diagnosis from the microscopical standpoint is easy, since in the deposits of spring catarrh epithelia the basement membrane is not lacking.

Miss Katherine Hill has made a careful pen and ink drawing of the prepared sections—one stained with eosin-hematoxylin alone, and the other with Weigert's stain alone—and they are here exhibited.

In addition to these histological and bacteriological examinations, my assistant, Dr. W. G. Tucker, has studied the discharges from the eye, as well as the membranous deposit on the upper lid before the use of antiseptics, but with negative results.

As this case is, for obvious reasons, not reported as a cure performed, there is not much to be said about its subsequent treatment. This consisted mainly of cold fomentations applied every hour to the ocular region, followed by irrigation of both sacs with a saturated solution of boric acid in 1-10,000 of mercuric chlorid, to which 4 per cent. of borax had been added. After the operative traumatism had been somewhat repaired, the *x*-rays were applied to the everted lid after the method employed by Allport and Pusey. Dr. Pardee exposed the patient almost daily for six weeks, during which time the topical treatment was supplemented by a solution of (1-1000) suprarenalin applied before the Roentgen ray exposure. The lid wounds healed kindly, the corneal vessels and the gray opacity about the limbus cleared in about ten days and all the symptoms were relieved within a very short time. At the present writing (May 6, 1907) there is no visible corneal involvement, the palpebral elevations have altogether disappeared, leaving a smooth, faintly cicatricial surface, the drooping of the upper lid is much improved, there is no epiphora, no discharge from the conjunctival sac and the patient makes no complaint.

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[2] See, for example, the work of Danvers, "Spring Catarrh of the Eyes" (J. Bale, London, 1901), and the references in Herbert Parsons' "Pathology of the Eyes," vol. iii, p. 89.

Although the warm days of March, April and the first half of May, 1907, have been too few to act as a satisfactory test of improvement, yet the patient's mother tells me they have been sufficient in former years to induce considerable itching and other troublesome symptoms. Probably several periods of x-ray exposure will be required during the next year before the full benefits of the proposed treatment can be realized.

THE POST-OPERATIVE HISTORY OF SIXTY CASES OF SIMPLE CHRONIC GLAUCOMA—SECOND SERIES.*

Charles Stedman Bull, A.M., M.D.
NEW YORK CITY.

The first series of fifty cases of simple chronic glaucoma and their post-operative history were presented to the society five years ago and were published in the Transactions for 1902.

This second series of sixty cases have been under more or less constant observation for a varying period, from five to eleven years. They were all cases occurring in private practice, and the observations and tests used in the repeated examinations were all made by myself.

The operation performed in all of the cases was iridectomy, and but one operation was done on each eye. In all, one hundred and fifteen eyes were submitted to the operation.

The age of the patients varied between 37 and 78 years. In the decade between 30 and 40 years there was 1 case; between 40 and 50, 9 cases; between 50 and 60, 24 cases; between 60 and 70, 22 cases; between 70 and 80, 4 cases.

Sex.—Of the 60 cases, 27 were men and 33 were women.

Race.—All were native-born Americans of mixed English, Scotch, Irish, French or Dutch ancestry.

Existing Refraction.—Of the 60 patients, 18 had simple hypermetropia; 14 had simple hypermetropic astigmatism; 16 had compound hypermetropic astigmatism; 8 had simple myopic astigmatism, and 4 had mixed astigmatism. In all sixty cases both eyes were involved.

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*Read before the American Ophthalmological Society in Washington, May 8, 1907

Operation.—Iridectomy was done on one eye alone in 5 cases, the other being either blind from absolute glaucoma, or with the field so narrowed and vision so impaired as to contraindicate the operation. The operation was done on both eyes at a varying interval of time in 19 cases, and on both eyes simultaneously in 6 cases.

Field of Vision Before Operation.—There was concentric narrowing of the field in all directions, most marked on the nasal side in 70 eyes. There was narrowing on the nasal side only in 35 eyes. There was concentric narrowing of the field with central or paracentral scotomata in 11 eyes. There was loss of the entire nasal half of the field in 4 eyes. The scotomata, when present, were of a varying size, shape and location at different times.

Tension.—In all the cases which I was enabled to observe frequently before operation the tension varied at different times in the day and was higher in the morning, especially after a restless night. This fact has been observed by others, and these variations in tension have come to be regarded as rather characteristic of chronic glaucoma. With the tension higher in the morning it would seem best to introduce miotic solutions in the early morning before the tension has risen.

An interesting factor in the disease was the condition of the arterial tension, and in six cases I was enabled to have a number of sphygmomanometric tests made, and every test showed the presence of increased arterial tension. In a large proportion of the patients who were over 60 years of age there were well-marked evidences of arteriosclerosis present in the retinal vessels, and there is no doubt in my mind that this condition plays an important part in the etiology of chronic glaucoma.

Effect of Iridectomy on Central Vision.—There was a temporary improvement in the central vision in 14 eyes, or about 12 per cent. There was no permanent improvement of the vision in any eye. There was no impairment of central vision immediately after the operation in any eye. There was a slow but steady failure of central vision after operation in 94 eyes, or about 70 per cent., during a period of five to eleven years. There was a maintenance of existing vision in 21 eyes for a period of years, the longest being eight years.

Condition of the Tension After Operation.—There was an immediate diminution of tension in 112 eyes. There was a permanent diminution of tension, for as long as the patients were under observation, in 24 eyes. There was no apparent effect produced on the tension in 3 eyes.

Condition of the Field After Operation.—Owing to greater care having been exercised in choosing cases for operation in this second series of sixty cases, there was no further narrowing of the field of vision in any eye, as the immediate result of the operation. But as the months and years passed there was a slow but steady increase in the concentric narrowing of the field in 92 eyes. In 16 eyes the final result was absolute glaucoma.

BRIEF RÉSUMÉ.

1. Temporary improvement of central vision after iridectomy in 14 eyes.
2. No permanent improvement of vision in any eye.
3. No impairment of central vision in any eye.
4. Slow but steady failure of central vision after iridectomy in 94 eyes, or about 70 per cent., during a period of five to eleven years.
5. Maintenance of existing vision after iridectomy in 21 eyes for a period of years, the longest being eight years.
6. Immediate diminution of tension after iridectomy in 112 eyes.
7. Permanent diminution of tension after operation for a period of three to eleven years in 24 eyes.
8. No apparent effect produced on tension by operation in 3 eyes.
9. No immediate increase in narrowing of the field after operation in any eye.
10. Slow but steady diminution of the field as time elapsed in 92 eyes.
11. Absolute glaucoma the final result in 16 eyes.
12. Apparent arrest of the progress of the disease as to central vision, condition of field, and tension, in 21 eyes.

The best results from the operation, both as to visual acuity and field of vision, occurred in those cases in which the central vision was the best and the field was the least encroached upon, at the time of operation.

From a careful consideration of the 110 cases reported in the two series of cases I can not say that my experience and observation have revealed any new facts by which we can establish a prognosis as to whether any given case should be treated by operation or by the use of miotics.

Furthermore, it would seem as if the apparent necessity for continuing the use of miotics after the operation befogs the judgment as to the lasting effect of an iridectomy on the progress of the disease. In most, if not all, of these cases, if the local use of miotics after the operation is for a time omitted or entirely discontinued, the ultimate results are more unfavorable.

From a very close study of the results of operation in individual cases, it would seem that the prognosis for surgical interference is less favorable, the earlier the age of the patient at which the disease first manifests itself. Some curious facts are sometimes elicited by a careful study of each case, such as the following: The number of cases in which the tension remained normal after operation was decidedly greater than the number of cases in which the visual acuity was maintained.

CONCLUSIONS.

My own experience in the operative treatment of chronic glaucoma has not led me to regard this method of treatment as a certain means of cure, since in the majority of cases the operation is not followed by the hoped-for success, while in a considerable number of the patients there is immediate impairment of vision induced, and in some rapid blindness. We must change our mental attitude and learn to look on iridectomy, not as a means of *cure*, but as a method of either arresting the course of the disease or of delaying its progress.

Furthermore, it is not so much the *operation* which arrests the disease, but the *early performance* of the operation.

The view that iridectomy should be regarded as a last resort in chronic glaucoma should be stamped as absolutely wrong, for experience teaches us that it is very bad surgery.

The operative effect of iridectomy in simple chronic glaucoma is more certain and immediate the earlier it is done. The slightest narrowing of the field of vision, whether for form or for color, associated with failure of central vision, increase of tension, and cupping of the disc, demands immediate operation. Furthermore, the beneficial effect of an iridectomy stands in direct proportion to the increase of tension. An early iridectomy, while the iris is still mobile, the field but little contracted, and the cupping of the optic disc slight, very often arrests the progress of the disease for a long period of time. Done early it offers better prospects for the arrest of the process for a long period of time than other methods of treatment now at hand.

PRIMARY SARCOMA OF THE EYELID.

A. N. Alling, M.D.
Clinical Professor of Ophthalmology, Medical Department, Yale University.
NEW HAVEN, CONN.

On Sept. 24, 1906, Mary Perkins, aged 7, was brought to me by her mother with the statement that a small growth had appeared on the child's left lower eyelid about six weeks before and that it had gradually increased in size. The patient was in all respects healthy and there was no history of trauma. A hard tumor the size of a pea was felt a little below and outward from the left outer canthus. It was beyond the tarsal plate and in the cellular tissue, with the skin movable over it. Three or four smaller ones could be discovered lying on the tarsal plate of the lower lid and one over the outer part of the tarsus of the upper lid. There was no glandular involvement. On account of the situation of the tumors, which otherwise resembled chalazia, it was advised that they be excised immediately, but the patient was not brought to the hospital until October 1. The growths in the meantime had increased in size decidedly. An incision was made in the skin of the upper lid starting over the mass there to be felt and, sweeping around the external canthus over the main mass, it was extended inwards along the lower lid as far as the tumor could be felt. Excepting the part in the upper lid the new growths seemed more or less connected in a chain, and were removed as thoroughly as possible. The wound healed kindly and no recurrence could be made out until the middle of December, when it became evident that the neoplasm, which was now known to be malignant, was recurring in both the lids. The 1st of January a more radical operation was done, including removal of the outer half of the lower lid and extensive dissection of the upper lid. If this was to prove effectual the sequel is much to be regretted, for the child while in the hospital was attacked with scarlet fever and died shortly after.

The pathological report, kindly furnished by Dr. H. S. Arnold, is as follows:

Specimen consists of a few small bits of tissue in aggregate size of a small hazelnut. In color, grayish white, with yellow bands. Consistency rather soft and slimy. Sections hardened in formalin and alcohol and cut in celloidin.

Microscopic Examination.—Specimen consists of orbital fat and pieces of tumor tissue. The latter consists of a mixed growth, in which there are strands of tissue, taking on red with eosin, presenting the curled fibrillated appearance of fibrous tissue; between these strands are masses of cells, intercellular substance, and thin walled blood vessels. The intercellular substance is somewhat granular in appearance and takes on the bright blue color from the hematoxylin characteristic of mucoid tissue. The cells are rather small, somewhat irregular in size and shape, and show comparatively numerous mitoses.

Diagnosis.—Fibro-myxo-sarcoma.

Primary sarcoma of the lid may be counted among the uncommon affections of the eye, since up to the present time only about sixty-five cases have been recorded. Wilmer in 1894 went over the literature with great care and found thirty-five cases, and Veasey in 1899 added eleven more. Johnston, dealing with melanosarcoma alone, somewhat increased the list. Beside those reviewed by Wilmer and Veasey, we have been able to find twenty-nine cases, including three or four not mentioned by these authors. Twenty have been studied in the original articles and the remaining from more or less complete reviews.

The tumor presents either on the conjunctival side of the tarsus or on the external aspect under the skin. Its size when diagnosed varied from that of a pinhead to that of a fist. The color depends on the character of the growth relative to the amount of pigment contained. When arising from the conjunctiva it is said to be sometimes pedunculated. As it increases in size the skin may ulcerate. No patient younger than that recorded by Veasey has been found (7 months), but two older, namely one 82 (Somer) and one 83 (Dodd). The cases seem fairly equally distributed through the various periods of life except in the first decade, when they are rarer.

The two sexes are about equally affected, with the slight majority female. Before coming under observation the tumor has existed for a period of from six weeks to several years. Regarding etiology, in a few traumatism seems to have played a part (LeGrange, Bernardini, Fromaget, Gillette, Van Duyse and Guibert). They may also originate in a wart (Bernardini) or nevus (Enslin, Gaudenzi, Hohenberger).

Conflicting statements have been made regarding the preponderance of the pigmented or non-pigmented variety, but our analysis shows that the proportion of melanosarcoma is decidedly greater in the later cases reported. Whereas Veasey found 26 per cent. of forty-six cases pigmented, we find at least 40 per cent. of all cases pigmented. Thirty-four per cent. have been spindle-celled.

32 per cent. round-celled and 26 per cent mixed-celled. In five no satisfactory pathological details were found.

Recurrence is, of course, the rule, but Hohenberger's case is said to have gone thirteen years and that of Würdemann five years without return. Treatment has varied from cauterization to enucleation, with exenteration of the orbit, but death ensues in the majority of cases from cachexia or metastases. Whether the *x*-ray, Finsen light or radium will prove of great service can only be decided by the test of time. I am greatly indebted to Dr. E. M. Blake, who has assisted me in the collection of information.

Below is a list of cases not to be found in the reviews of Wilmer and Veasey:

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A CASE SHOWING INCREASE OF HYPEROPIA DURING MARKED GLYCOSURIA.

Robert Ritchie Saunders, M.D.
PHILADELPHIA.

The rarity of reports upon the refractive changes occurring in diabetics, and a paper read recently before the Ophthalmic Section of the College of Physicians of Philadelphia by Dr. George M. Gould, in which the author expressed a doubt that such changes could occur in the course of diabetes, led me to report the following case:

Mrs. R., a lady then about 60 years old, consulted me Jan. 7, 1901, on account of an attack of conjunctivitis due to influenza, Under appropriate treatment she speedily recovered.

On Nov. 13, 1901, she came for refraction, stating that her eyes were last refracted ten years previously by Dr. Mittendorf, of New York.

Ophthalmoscopic examination revealed clear mediæ, discs small and round and the vessels and fundi normal. This refraction and all subsequent refractions were made without the use of a mydriatic.

O. D. V. = 5/30 + 2.25 sph. ○ + .25 cyl. axis 90° = V. 5/3.
O. S. V. = 5/30 + 2.00 sph. ○ + .25 cyl. axis 90° = V. 5/3.

For near vision, + 2.50 sphs. were added to the above. These lenses were worn by the patient until Aug. 19, 1903, when she returned, complaining that vision became blurred at times. Ophthalmoscopic examination showed no departure from the normal findings of January, 1901. The refraction of Aug. 19, 1903, was as follows:

O. D. V. = 5/22 + 1.75 sph. ○ + .25 cyl. axis 90° = V. 5/3.
O. S. V. = 5/22 + 2.00 sph. = V. 5/3.

Contrary to direction, the patient did not return until Sept. 5, 1903, when the following refraction was found:

O. D. V. = 14/100 + 2.00 sph. ○ + .25 cyl. axis 90° = V. 14/10.
O. S. V. = 14/100 + 2.00 sph. ○ + .25 cyl. axis 90° = V. 14/10.

To the above, + 3.00 sphs. were added for near and the whole formula was prescribed.

Toward the latter part of September the patient wrote me from Atlantic City that, while sitting on the porch, her vision had suddenly grown poor and that her glasses no longer seemed of much use to her. She was directed to return to the city and report to me as soon as possible, but did not do so until October 5, when it was found that her hyperopia had increased to about + 4.50 sph. in each eye. These lenses gave normal vision, and ophthalmoscopic examination showed perfectly clear mediæ and normal fundi as before. Unfortunately, through oversight, the exact data concerning the refraction on this date were not recorded in my case book; so the findings of this date are given according to my own recollection, supplemented by that of my patient.

Further inquiry elicited that she had been steadily losing weight, suffered from a continual thirst and itching of the skin, which had grown dry and harsh. She complained also of a pain that extended around from her back to the epigastrium on the left side about over the region of the pancreas.

On Oct. 6, 1903, a sample of the morning urine showed a specific gravity of 1.040, abundance of sugar but no albumin. Some Fleischman's yeast was then thoroughly mixed with the urine and the whole was allowed to ferment for twenty-four hours, when it was found that the specific gravity had dropped to 1.008.

Appropriate treatment and dieting were now instituted and her condition markedly improved. On Oct. 13, 1903, the specific gravity of the urine was 1.022, but there was still some sugar present. Fermentation for twenty-four hours reduced the specific gravity to 1.016.

On Oct. 17, 1903, the refraction was as follows: O. D. + 4.00 sph. = 5/5; O. S. + 4.50. = 5/5. The weight of the patient on this date was 176 pounds.

Oct. 20, 1903, the urine had a specific gravity of 1.016 and showed a small amount of sugar. After twenty-four hours' fermentation, the specific gravity was 1.014.

Refraction Oct. 21, 1903: O. D. + 4.50 sph. = 14/10; O. S. + 4.50 sph. = 14/12. For near + 3.00 sph. added gave comfortable vision at 1/3 meter.

Oct. 27, 1903, the urine showed a specific gravity of 1.024, which fell to 1.022 after twenty-four hours' fermentation.

The urine of Nov. 2, 1903, had a specific gravity of 1.002 and no sugar was present.

Refraction on Nov. 4, 1903, was as follows: O. D. + 4.00 sph. = 14/15; O. S. + 3.50 sph. = 14/15.

The ophthalmoscopic findings remained unchanged from what they had been at previous examinations and the patient had gained seven pounds in weight, making her weight 183 pounds.

The refraction on Nov. 12, 1903, was: O. D. + 3.25 sph. = 5/3; O. S. + 2.75 sph. = 5/3.

The urine on this date had a specific gravity of 1.014 and there was no sugar present.

Nov. 23, 1903, the urine showed a trace of sugar, having a specific gravity of 1.026 before fermentation and 1.024 after fermentation.

The patient did not return until Jan. 14, 1904, when the urine was found to be free from sugar with a specific gravity of 1.024. The refraction on this date was: O. D. + 250 sph. = 5/3; O. S. + 2.00 sph. = 5/3.

On March 8, 1904, after a week's unrestricted diet, no sugar could be detected in the urine, which had a specific gravity of 1.015, and the patient had gained five pounds during the week.

Contrary to medical advice, the patient discontinued treatment and paid no more attention to diet, as she considered herself well. She returned to me on April 18, 1904, when the urine was found to contain considerable sugar again and had a specific gravity of 1.024. Treatment and diet were again resumed, and on April 28, 1904, the urine was again found to be free from sugar with a specific gravity of 1.024.

The urine on May 10, 1904, again showed a trace of sugar and the specific gravity was 1.026.

On May 18, 1904, the urine was free from sugar and had a specific gravity of 1.018.

After this the patient drifted from observation until recently, when, in response to a letter asking her to call at my office, she called, April 26, 1907, and the following examination was made:

The urine, which contained much sugar, had a specific gravity of 1.020 before and 1.000 after fermentation for twenty-four hours.

The ophthalmoscopic findings were as before—clear mediæ and normal eye grounds.

With the Chambers-Inskeep ophthalmometer a low amount of astigmatism, axis 90°, was found.

Refraction without a mydriatic was as follows: O. D. V. = 14/30 + 2.50 sph. = 14/10; O. S. V. = + 2.25 sph. = V. 14/10. With + 3.00 sphs. added to this she was able to read J. type No. 1 at 13 inches.

While in Europe last summer she consulted an oculist who prescribed for each eye + 2.00 sph. for distance and + 5.00 sph. for near.

The present weight of the patient is 157 pounds, and she states that a year ago her weight was 164 pounds. Her tongue is dry and parched in the mornings, she feels drowsy at times, and she has still the pain in her left side which extends around from the back to the region of the epigastrium. Unfortunately, she persists in thinking that a quack nostrum which she has been taking for some time is curing her and she does not limit her diet.

CASES OF CONGENITAL INEQUALITY OF THE SIZE OF THE CORNEÆ IN NORMAL EYES.*

ALVIN A. HUBBELL, M.D.
BUFFALO, N. Y.

I do not claim to have fully examined the literature on the subject of the dimensions of the cornea, but, so far as my studies have extended, I have never found the record of any cases in which the diameters of the two corneæ in the same person were unequal. They certainly are rare, even if any have been published, and it is for this reason that I desire to put on record two such cases which have come under my observation. In both of these the patients were healthy and of symmetrical bodily development. Neither eye, in either case, had ever been diseased, and other than the non-symmetry of size of the corneæ nothing could be detected that was structurally unusual or abnormal.

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* Read at the meeting of the American Ophthalmological Society at Washington, D. C., May 8, 1907.

Case 1.—Miss M. H., of Titusville, Pa., 18 years of age, visited my office on March 26, 1896, in company with her mother, who desired to consult me for some trouble with her eyes. I at once observed the lack of symmetry of the size of the corneæ of the daughter, and, with her permission, I made notes to the following effect: She had never experienced any distress from the use of her eyes. The vision of the right eye equalled nearly all of 5/4, Snellen, also with + 0.50 D. sph.; that of the left eye also equalled nearly all of 5/4, and the same with + 0.50 D. sph. Maddox rod showed slight esophoria and very slight right hyperphoria. Both fundi were normal in every respect, as shown by an ophthalmoscopic examination. Both irides were dark blue and were of the same tint. The pupils were the usual size of a healthy young woman of that age. They responded equally to light and their dimensions were the same. The Javal ophthalmometer gave a reading for each cornea of + 0.50 D. cyl., ax. 90. Each cornea was almost a perfect circle, with the usual variation of a slightly shorter diameter vertically than horizontally. Only the horizontal diameters were measured. The diameter of the right cornea was 10 mm., scant, and that of the left was 13 mm., scant, measured to the extreme margin of the transparent portion.

The young lady's grandmother on her mother's side, according to the statement of herself and her mother, had eyes which appeared to be in the same condition, although they could not tell which cornea was the larger.

On examining her mother's eyes, I found the right defective in vision and with a large amount of comp. myopic astigmia. The left eye was emmetropic. The two corneæ were of equal size. The anisometropia of the mother's eyes did not, however, have any hereditary relation to the condition of the daughter's eyes.

Case 2.—Miss C. B., aged 12, of Buffalo, N. Y., was sent to me by Dr. Francis J. Carr, of that city, for examination of her eyes for refractive error. She had been suffering from frequent and severe headaches which the doctor feared might be due to eye-strain. She is a well-developed girl for her age, has a good family history, so far as I can learn, and, aside from the headaches, has always been in good health. She has never had sore eyes or any weakness of vision in any way. She has full eyes and regular features, and the facial expression is rather pleasing, except for the peculiarity so apparent in the eyes. The family has noticed, during all of her life, that one pupil was a little larger than the other, and that the eyes were not exactly of the same color.

The visual test shows a manifest hypermetropia of 1.00 D. in the right eye and 0.50 D. in the left. Under homatropin solution (2 per cent.), however, the hypermetropia was 1.25 D. in each eye. Both with and without the homatropin the vision in each eye was 5/5. Maddox rod showed seven degrees of esophoria and one-half degree of right hyperphoria. Each fundus with the ophthalmoscope was perfectly normal, the appearance being the same in both eyes. Before using the homatropin the examination of the pupils showed the right a little smaller than the left in moderate light, and in bright light they both contracted to nearly the same size; but in deep shadow the left became dilated to almost twice the size of the right. In moderate light the right pupil was 2½ to 3 mm. in diameter and the left was 4 to 4½ mm. Under homatropin the right pupil did not dilate quite as fully as the left. The color of the right iris was blue, and the left, while of a bluish cast, tended more towards a brownish color, the brown being especially distinct around the sphincter of the pupil.

Accompanying this difference in the size of the pupils and the color of the irides was also a slight but very apparent difference in the size of the corneæ, the right having a less diameter than the left. Both corneæ had the usual circular form. The measurements of the horizontal diameters were in the right, 11½ mm. and in the left 13 mm.

So far as known, no such case of corneal asymmetry has occurred in either her father's or mother's family.

I realize that these two cases have no special practical value, but I deem them of sufficient interest, anatomically, to place them before you.

212 Franklin Street.

PSEUDO-MEMBRANOUS CONJUNCTIVITIS CAUSED BY STAPHYLOCOCCUS AUREUS AND ALBUS.

Richard H. Johnston, M.D.

Surgeon and Pathologist to the Presbyterian Eye, Ear and Throat Hospital;
Lecturer on Diseases of the Nose and Throat in the
University of Maryland.

BALTIMORE, MD.

A child, 9 months old, was brought by its mother to the eye clinic of the Presbyterian Hospital in the service of Dr. Hiram

Woods, with the following history: Three weeks before its entrance into the hospital it contracted measles, from which it made a good recovery. As it was convalescing, the O. S. suddenly became very red and there was rather profuse lacrimation. The upper lid was swollen so that the eye was partially closed. The child did not seem to suffer. When it was brought to the hospital objective examination showed a child fairly well nourished. The O. S. was closed from a marked swelling of the upper lid which was somewhat reddened. On opening the lids there was a discharge of seropurulent fluid. On close inspection the conjunctiva of the upper lid was seen to be covered with a pseudo-membrane of a whitish color and rather thick in character. This membrane did not continue beyond the fornix. The conjunctiva of the eyeball was red and showed coarse blood vessels. The cornea appeared intact. Ciliary injection and chemosis were absent. I was called in to make smears and cultures from the membrane. Believing that the membrane was tightly adherent to the conjunctiva, I attempted with forceps to remove a small piece for examination. To my surprise the entire membrane came away, exposing the lid conjunctiva, which bled very slightly. The conjunctiva was fiery red after the removal of the membrane. The membrane on closer inspection was thick, of a grayish-white color and the shape of the upper lid. It occupied the entire conjunctival surface and was very tough, almost leathery in consistence. Cultures were made on blood serum to find, if possible, the Klebs-Loeffler bacillus. The smears, stained with gentian violet, showed no organisms. Twenty-four-hour cultures of blood serum gave small yellow and white colonies which in smears proved to be staphylococcus aureus and albus. No other organism was found. At the next visit to the hospital, three days later, Dr. G. A. Fleming reported the return of the membrane. After this visit the case did not return for treatment and the subsequent course of the disease is not known. It probably ran a benign course and ended in recovery. That the staphylococcus can form pseudo-membrane is well known. This is well illustrated in fibrinous or membranous rhinitis, in which occasionally it is the only organism found. The pneumococcus is another organism which has been found in pure culture in membranous conjunctivitis. The color of the membrane does not help in diagnosis. The only sure method in membranous conjunctivitis is to make cultures.

919 North Charles Street.

THE

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Editorial.

EYE CLINICS IN CHICAGO.

THE OPHTHALMIC RECORD publishes in this issue and will continue to publish in subsequent issues a list of operative Eye clinics in Chicago, together with the names of the operators, the names of the hospitals, and the hours during which work can be seen. THE RECORD has made this list as complete as possible, but it realizes that there may be some mistakes in the compilation, and the Editors would esteem it a personal favor if the gentlemen performing this class of work in Chicago would read the schedule carefully, and if they desire any changes made such suggestions should be made in writing and sent to the Editorial Secretary.

Much of the best work in this department is done in the city of Chicago, but heretofore it has been difficult for visiting surgeons to ascertain where they can see operations, etc., from day to day, and, while most surgeons would have been glad to have directed such visitors to the various clinics, there has been no combined action in the matter, and consequently no accessible means of accurate information. The publication of these schedules should, and will, make it easy for visitors to know where, when and by whom they can see operations, and we believe these schedules will add their quota to popularize Chicago as a clinical center. It is hoped that other cities will follow the example of Chicago and publish a reliable list of clinics. F. A.

Reports of Societies.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

Abstract Report.

THE VALUE OF SYSTEMATIC BACTERIOLOGIC AND MICROSCOPIC STUDY IN THE TREATMENT OF GONOCOCCAL CONJUNCTIVITIS.

Dr. Charles A. Oliver, Philadelphia, read this paper, the object of which was to emphasize the value of bacteriologic study for the purpose of regulation of therapy during the treatment of this disease. For several years past the author had had rough smear and careful stain studies made daily in his cases of this disease, not only for the certain diagnosis of the disease, but in order to regulate the employment of the agents used during the progress of the affection; the condition and the numbers of the attacking floral life, the amount and character of the protecting faunal elements, and the state of the resultant débris. As a result it had been found that the most virulent types of cases could be governed more easily, the milder forms more speedily cured, and the apparently clinically insignificant ones quickly and permanently gotten rid of. The special methods of treatment employed had been spoken of in the discussion on gonorrheal ophthalmia at last year's meeting of the society and were omitted from this communication.

A RARE TYPE OF PERIVASCULITIS RETINÆ IN A YOUNG WOMAN—THE SUBJECT OF INHERITED SYPHILIS.

Dr. Charles A. Oliver, Philadelphia. reported this case, a careful study of which, extending over many years, and deep research into ophthalmic literature having shown it to be sufficiently rare in kind, type and degree to be given permanent record. The interesting points were: Subjective, 1, the non-disturbance of the central negative scotomata; 2, the non-disturbing qualities of the two physiologic blind spots in spite of their necessarily marked increase in size. Objective, 3, the predominance of the main visible degeneration expressions of the lymph channel walls of the central retinal circulation; 4, the vast area over which the engorgements of the vascular channels of the central retinal circulation extends; 5, the congeries, the false loops and the curious twistings of the vascular currents; 6, the characteristic tint of the venous obstruction columns and the excellent tinting of the arterial currents; 7, the great irregularities of both the arterial and the venous currents; 8, the ophthalmoscopic appearance of some of the fine vascular stems, necessarily with but little or any lymph channel wall thickening; 9, the but one course degeneration area of the retinal fibers appearing on and in the nasal half of the optic disc and along the nasal borders of the disc; 10, the superficiality of the fresh hemorrhagic extravasations from both the smaller arteries and the finer veins; 11, the remarkable preservation of the intervening retinal elements with the apparent non-involvement of the underlying glandular functioning structures and material and the further removed chorioidal membrane.

CONCERNING THE VASCULAR CHANGES IN THE RETINA AND OPTIC NERVE IN THE TOXIC AMBLYOPIAS.

Dr. G. E. de Schweinitz, Philadelphia, read this paper, which contained a brief review of the literature of the subject in so far as it related to quinin amaurosis, tobacco-alcohol amblyopia, filix-mas amblyopia and lead amblyopia, and presented the results of a restudy of the author's sections of animals' eyes with long-standing quinin amaurosis and a human eye with tobacco-alcohol amblyopia, only in so far as the vascular changes were concerned. It contained also the results of a pathologic study of the retina and optic nerves of a fatal case of methyl-alcohol amblyopia. The following conclusions were drawn: 1, The ophthalmoscopic evidence of retinal vascular disease in the sense of obliteration of the arteries and apparent conversion of their walls into white cords in long-standing quinin blindness had been confirmed by a number of observations; 2, there was no confirmation of chorioidal vessel disease in experimental quinin blindness; 3, in long-standing quinin blindness in animals careful examination failed to confirm the presence of any true endo-vasculitis. There appeared in these cases to be an edema with stretching of the fibers of the walls of the central artery and vein of the retina or loose connective tissue which encases them; no thrombus formation takes place; 4, in a number of instances of tobacco-alcohol amblyopia which had come to autopsy extensive vascular disease in the form of thickening of the vessels had been described, but there was no definite evidence that these alterations constitute the underlying basis of the disease.

TWO CASES OF RECURRENT CONJUNCTIVITIS PRODUCED, ONE BY THE HORSE, THE OTHER BY CATS.

Dr. S. D. Risley, Philadelphia, reported these two cases: 1, Patient aged 25, unable to enter the near vicinity of horses without being immediately attacked by uncontrollable sneezing, stuffed nostrils and profuse lacrimation, with intense conjunctivitis, the symptoms persisting for several hours. The manifestation is so invariable that she prefers to walk from her home to the railroad station rather than ride behind her father's horses. 2. Patient, aged 17; for a period extending over five or six years any attempt to fondle a cat brought on immediately profuse lachrimation and conjunctivitis.

CASE OF MELANOTIC SARCOMA OF THE LIMBUS.

Dr. C. A. Veasey, Philadelphia, reported this case: Male, aged 47; began as a small brownish spot just to the temporal side of the corneo-scleral junction twelve years previously. Two growths, or one large growth with two lobules, covering about two-thirds of the corneal surface; the upper and larger ovoid in shape, 11 mm. long, 10 mm. wide; elevated 5 mm. above corneal surface and extending 1½ mm. beyond the corneal limbus on the sclera. Not mobile, firmly attached to the underlying ocular structures, dark brown in color. The lower and smaller growth, or lobule, almost horizontally oval, 10 mm. long, 6 mm. wide, elevated 5 mm. above corneal surface, color a light pinkish hue. Like the upper portion, firmly attached and non-mobile. No family history of tumors of any kind. Enucleation. Microscopic examination showed undoubted spindle-cell sarcomata, the upper growth being pigmented, the lower, in the main, non-pigmented.

DISCUSSION.

Dr. Edward Jackson, Denver, reported a case of a boy 14 years of age, seen fifteen months ago, with a very dark, practically black, mass close to the limbus, which had not originated in the limbus but about 2 mm. outside, which proved to be a melanotic sarcoma. Growth adherent to the sclera, was removed and wound healed without difficulty; no recurrence of the growth.

Dr. Sutphen had had to enucleate an eye several years ago for such a growth, and there was no local recurrence for some years, but the man subsequently died of metastatic sarcoma.

Dr. C. R. Holmes, Cincinnati, had some drawings of two cases of similar tumors, both patients subsequently dying from metastases.

Dr. Allyn recalled a similar case in a man 50 years of age in which the man lived many years without recurrence.

Dr. Sherman reported a case occurring in a farmer 87 years of age; had to do second operation six months after the first: later removed the eye; within a short time the growth extended so deeply in the orbit that it involved the ethmoid cells, and after death postmortem showed extensive invasion of the brain.

Dr. Marple, New York, had within the last three weeks seen a case similar to that reported by Dr. Jackson.

CASES OF CONGENITAL INEQUALITY OF THE SIZE OF THE CORNEA IN NORMAL EYES.

Dr. A. A. Hubbell, Buffalo, presented this report, which included two cases in which one cornea has a greater diameter than the other; in one of them there was an accompanying difference in the size of the pupils and in the color of the irides. The eyes were normal in every way and the vision in each eye was five-fifths or better.

THE POSTOPERATIVE HISTORY OF SIXTY CASES OF SIMPLE CHRONIC GLAUCOMA.—SECOND SERIES.

Dr. C. S. Bull, New York, presented this paper, the first series of fifty cases of simple chronic glaucoma and their postoperative history having been presented to the society five years ago. This second series of sixty cases had been under more or less constant observation for a varying period, from five to eleven years. They were all cases occurring in private practice, and the observations and tests used were all made by himself. The operation was iridectomy in every case and was done on 115 eyes. In every case there was narrowing of the field, increased intra-ocular tension, impairment of central vision and cupping of the disc. The majority of the patients showed high arterial tension, and many of them signs of arteriosclerosis. Observation of patients after operation varied from three to eleven years. Best results in those cases with but slight impairment of central vision and slight narrowing of field. Operation should not be regarded as a cure for the disease but as the best means of arresting its progress. It was not so much the operation in itself as the early performance of the operation which gave the best results. Hence the view that iridectomy in chronic glaucoma should be regarded as a last resort was absolutely wrong and very bad surgery.

Dr. Bull defined chronic glaucoma as occasional, interrupted, loss of accommodation, never complete but partial, varying at different times of the twenty-four hours, occasional partial dilation of the iris, never complete dilatation, impairment of central vision, concentric narrowing of the field of vision, cupping, more or less marked, beginning on the temporal side of the disc, and increased tension which at times is entirely absent.

DISCUSSION.

Dr. de Schweinitz called attention to some statistical reports from the European clinics showing that chronic glaucoma failed to be benefited by operation in 73 per cent. of cases. Statistics from the Hungarian clinics, however, were different, Rossa maintaining that he had had success in 70 per cent. of his operated cases.

Dr. Clarke said there was a very great difference of opinion as to the amount of iridectomy to be performed in order to get good results. Often more than was necessary was done, and for many years he had made only a narrow iridectomy, getting as near to the base as possible.

Dr. Marple, New York, asked if the writer had had any intraocular hemorrhages in these cases, and if they occurred in cases where the evidence of arteriosclerosis was conspicuous; he had recently seen a patient with chronic glaucoma and marked arteriosclerosis.

Dr. Edward Jackson, Denver, was inclined to think that there is a glaucoma, without exacerbation, without change in the pupil or iris until the late stage, that is not benefited by operation. He thought there was a class of chronic simple glaucomas, like those referred to by Dr. Posey at last year's meeting of the American Medical Association, that were better treated by myotics.

Dr. Bull, in reply to Dr. Marple's question, said he had never had in any of his cases showing unmistakable evidence of arteriosclerosis, any hemorrhage.

GLAUCOMATOUS EXCAVATION OF THE LAMINA CRIBROSA WITHOUT EXCAVATION OF THE PAPILLA AND WITH MARKED PAPILLITIS IN A CASE OF ACUTE INFLAMMATORY GLAUCOMA.

Dr. Brown Pusey, Chicago, presented this case, the findings in the nerve head of which were similar to those described in the case of Axenfeld-Kruckenburg, presented at the International Congress of Ophthalmology, held in Utrecht in 1899. The patient, a woman of 53, suffered with acute inflammatory glaucoma in the left eye. Subsequent iridocyclitis and enucleation. The tissue was fixed in formalin and imbedded in celloidin; sections made in various planes and stained with various stains. The head of the optic nerve was most interesting in that the lamina cribrosa was pushed back just as in a marked glaucomatous cup, but with no excavation of the papilla. The cup made by the pushing back of the lamina cribrosa was filled with nerve fibers. The interstitial tissue was increased, the blood vessels prominent, and their walls thickened.

UVEITIS PROLIFERATIVA (OF FUCHS).

Dr. W. Zentmayer, Philadelphia, read this paper, in which he called attention to Fuchs' views concerning the character of the inflammation in exciting eyes; Ruge's views and his critical consideration of those of Fuchs. The differential diagnosis between traumatic fibrinoplastic inflammation and exciting inflammation was considered. The clinical histories and the microscopic findings in two eyes which presented different types of proliferative uveitis and which excited different clinical types of sympathetic inflammation were reported. The specimen was tested for tubercle bacilli but none found.

RETINITIS, PROLIFERATING IN CHARACTER, IN A DETACHED RETINA OF TRAUMATIC ORIGIN. REPORT OF A CASE WITH PATHOLOGIC EXAMINATION.

Dr. W. T. Schumacher and Dr. C. M. Hosmer, Philadelphia, presented this paper. The case showed total detachment of the retina, presumably traumatic in origin, showing microscopically large and small hemorrhages, formative tissue, new vessels, leucocytes and excess of supporting tissue, all resulting in the formation of a solid mass in the anterior vitreous which resembled clinically a glioma. Absence of uveitis and of structural changes in the anterior segment of the eyeball. The patient was 12 years old when the eye was enucleated. The trauma was sustained at the age of 5 years, and the present condition had probably been existent to the extent of being noticable upon inspection for at least three years.

AN UNUSUAL FORM OF HEREDITARY CONGENITAL CATARACT OCCURRING IN SEVERAL MEMBERS OF THE FAMILY.

Dr. Burton Chance, Philadelphia, described a case of a family in which five members are affected by a very definite and peculiar variety of congenital cataract: a man, his wife, five sons and one daughter; persons affected, father, third, fourth and fifth sons and the daughter. The cataracts were partial and circumscribed and could be seen only by using strong lenses in the ophthalmoscope. They were of the same kind in every case and large enough to block the usual pupillary spaces. When the pupils were dilated the opacity shone out and measured about 4 mm. in diameter. In each person they were double, accurately symmetrical in the two eyes, and appeared to be stationary. They were not polar, neither were they nuclear, but seemed to lie between the nucleus and the posterior pole.

AFFECTIONS OF THE OPTIC NERVE DURING PREGNANCY.

Dr. Arnold Knapp, New York, had observed ten cases where the optic nerve and retina during pregnancy and labor showed changes which differed from retinitis albuminurica gravidarum. On studying the general symptoms accompanying these eye lesions they seemed to correspond to two groups, one of which is now recognized as toxemia of pregnancy, and the other as sepsis. He reported three cases of neuritic atrophy with no other change in eye grounds occurring in pregnant women with other manifestations of toxemia. The other cases, complicated with sepsis, the eye grounds presenting the additional changes of septic retinitis. There could be no doubt that this ocular condition is found with the symptoms of toxemia of pregnancy, and in the absence of other causes it can be safely assumed that an etiologic connection exists.

Dr. W. S. Posey, Philadelphia, had seen a similar case in a young married woman pregnant for the first time. In this case artificial labor was induced.

ACQUIRED CATARACT IN CHILDHOOD. REPORT OF A CASE.

Dr. Howard F. Hansell, Philadelphia, described an unusual case, a boy 3 years old, in whom the left crystalline lens had every appearance of a mature senile cataract and in the cortex of the right lens opacification had commenced. The father stated that he had noticed some months earlier a difference in the blackness of the pupils and that the left one had gradually become white. Visions in the left eye had gradually grown duller. No cause could be assigned. The writer had not been able to find in the ophthalmic literature the description of a case analagous to this.

THE POSITION OF THE OPHTHALMOLOGIST IN THE TREATMENT OF DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.

Dr. William C. Posey, Philadelphia, read this paper, in which he defined the position of the ophthalmologist in the treatment of sinusitis as threefold—that of diagnostician, consultant and surgeon. He considered that it behooved ophthalmologists, therefore, to acquaint themselves well with this field and to develop its ophthalmological phase to a degree commensurate at least with its rhinological. He condemned the common practice of denying the existence of a sinusitis by the failure of a cursory examination to reveal pus in the nose, believing that discharge from the sinuses into the nose is the exception rather than the rule, in inflammation of these cavities in which orbital complications tend to develop. It was to be remembered, too, that a congestion of the sinus without exudation might originate ocular symptoms. A number of cases were cited to support the essayist's contention.

DOUBLE PERFORATION OF THE EYEBALL BY METALLIC FOREIGN BODY.

Dr. Lambert, New York, reported a case. The patient, a man of about 30 years, while chopping wood felt something strike him with great force in the eye. He was using two hatchets, one as a wedge, striking it with the other. There was a small wound in the cornea 1 mm. to the temporal side of the center of the cornea in the horizontal plane. In the iris a small wound 2 mm. in length. Laceration in the retina and chorioid. The presence of a foreign body was demonstrated and its location determined by the *x*-ray.

A NEW TRIAL FRAME.

Dr. William H. Wilmer, Washington, exhibited a new trial frame possessing several desirable features. The cell for cylinders is marked, making it unnecessary to depend on the slight axis mark on the cylinder lens. The temples are adjustable, permitting a drop of 15 degrees for reading tests. The frame is made in dark color and exceptionally light in weight. The graduation on protractor is hand made, insuring accuracy, a very weak point in other frames.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting March 19, 1907.

DR. HOWARD F. HANSELL, Chairman, Presiding.

AMAUROTIC FAMILY IDIOCY.

Dr. Mary Buchanan reported a case of amaurotic family idiocy. The child was 15 months old, male, and of Hebrew parentage. It weighed 11 pounds at birth, but was a "blue baby;" the labor was normal. The father died of pneumonia several months before the child was born, and the mother remained in an apathetic condition for a month following his death. There was no history of tuberculosis, syphilis, or insanity in the immediate family of either parent. The patient was the youngest of six children, three of whom were living and well, while one was killed accidentally and the fourth died of typhoid fever. At three months of age the child did not notice things like the other children, at six months was unable to sit up, and had never been able to stand alone. It had been breast fed, and was well nourished, but looked very pale. All its muscles were flaccid and it lay inert in its mother's lap. Examination of the larynx by Dr. Walter Freeman showed either a hypertrophy of the folds just beneath the true cords or possibly a papilloma of the commissure, and he thought tracheotomy would be required, as the child breathed as though there were laryngeal obstructions. The eyes were slightly divergent, but could be moved in all directions. There was no fixation; pupils responded sluggishly. The optic discs were white and sharply defined, the vessels greatly reduced in caliber, especially the arteries. At the macula was the typical cherry-red spot, horizontally oval, surrounded by a white areola, densest at the center and fading away toward the periphery. The spot measured about 1.5 d. d. vertically by 2 d. d. horizontally.

Dr. Buchanan discussed the history and the pathology of the disease.

Dr. Hansell spoke of the cases of atypical amaurotic family idiocy which had been recently reported by Dr. Alfred Gordon before the College of Physicians. They were of Jewish extraction, and 12 to 14 years of age. They were slow in school and showed a mental development no greater than children of 3 or 4 years. One had an extra finger and an extra toe on each extremity. They differed essentially from the typical case which Dr. Buchanan had shown, and Dr. Gordon thought they were best classified as cases of modified amaurotic family idiocy.

ACUTE SUPERIOR AND INFERIOR POLIOENCEPHALITIS.

Dr. John B. Turner reported a case of acute superior and inferior polioencephalitis in a woman aged 51 years. The third cranial nerve was first involved, and the lesion extended downward, involving the fourth, sixth, ninth and tenth nerves. At no time were the fifth, seventh and twelfth nerves affected. The unusual feature of the case was that after the ophthalmoplegia externa had existed for twenty-five days bulbar symptoms developed and death occurred three days later. Unfortunately no autopsy was allowed.

Dr. de Schweinitz referred to three cases of polioencephalitis which he had recently studied in so far as their ocular symptoms were concerned. In one, a boy aged 16 years, under the care of Dr. Langdon, in addition to ptosis and loss of upward movement of the eyeballs, there was a retrobulbar neuritis, with central scotomas. In the second, a boy aged 8 years, there had been primarily complete external ophthalmoplegia of the right eye and partial ophthalmoplegia of the left eye. Gradually there was recovery of all of the muscles involved with the exception of the left external rectus, which remains paralyzed, and a paresis of the right external rectus. In the third case the patient was not investigated until long after the subsidence of the general symptoms. All ocular movements had recovered, but in each optic nerve there was a small patch corresponding to the area of the papillomacular bundle, of atrophic appearance, and it is probable that during the height of the disease the patient had an axial neuritis, not unlike that noted in Langdon's case. During a portion of the period of the illness of the second child there was a moderate optic neuritis, or, more accurately, congestion with edema, which has entirely subsided.

Dr. H. M. Langdon (by invitation) gave the details of the case under his care to which Dr. de Schweinitz had referred. A young man, aged 19 years, had been in good health except for an attack of la grippe four weeks before. Vision had failed suddenly and was reduced in three days to ·1/10 in one eye and 1/35 in the other. In both eyes the nerve heads were decidedly hyperemic. The fields were greatly contracted and color perception was lost. Upward movement of both eyes was abolished, there was slight ptosis, and the eyeballs were tender when pressed backward. The knee-jerks and station were normal. A tentative diagnosis of acute retrobulbar neuritis was made, and the patient admitted to the hospital. Vision was rapidly reduced to zero, and marked general prostration appeared, with intense headache. He was seen by Dr. Wm. G. Spiller, and a diagnosis of acute polioencephalitis given, with a favorable prognosis. Under treatment the vision rose to normal, the eyeball movements returned, and the scotomas disappeared. At the last examination there was a pallor of the temporal halves of each nerve, but vision had remained full.

TWO FATAL CASES OF ORBITAL CELLULITIS.

Dr. Howard F. Hansell reported two fatal cases of orbital cellulitis. In the first case the disease appeared in an apparently healthy child 4 months of age without evident cause, unless it could be regarded as the first sign of a general erysipelas which developed four days after the first ocular signs were noted. On the sixth day the child died of septic pneumonia. Bacteriologic examination of the blood taken from the orbit immediately after enucleation of the globe showed streptococci and diplococci in great abundance.

The second patient was a boy, aged 14 years, who was struck on the right eye by an icy snowball two days before admittance to the hospital. The eyeball was markedly prominent and immovable, the lids stretched to their utmost over the bulging ball, the media clear, and the retina and nerve edematous. The boy had projectile vomiting and was alternately comatose and delirious. Operation performed by Dr. J. Chalmers Da Costa within forty-eight hours of the time of the reception of the injury showed purulent orbital cellulitis and purulent meningitis of that part of the meninges adjacent to the roof of the right orbit. Death ensued on the third day after operation.

ORBITAL CELLULITIS AS A SEQUEL OF SCARLATINA.

Dr. Chance stated that he had reported two cases of orbital cellulitis as a sequel of scarlatina about four years ago. The local symptoms were somewhat like those in Dr. Hansell's cases. The contiguous sinuses were healthy and no pus was found when the swollen tissues were incised. Each case was fatal. Autopsy of one was allowed, but nothing specific was found. The cellulitis was supposed to have been produced by thrombotic processes in the ophthalmic vein and the communicating vascular sinuses.

Dr. de Schweinitz, referring to the first case reported by Dr. Hansell, thought it possible that the phenomena had been the result of thrombosis of the cavernous sinus rather than of cellulitis of the orbit. All of the symptoms detailed—the proptosis, intense edema of the eyelids, chemosis of the conjunctiva, anesthesia and necrosis of the cornea, and fixation of the eyeball—were the well-known symptoms of this affection, which might have arisen from any infected lesion in the area drained by the ophthalmic vein or its branches. Moreover, a septic thrombosis in this sinus could very well have been the starting point of the pneumonia which subsequently developed. Against this diagnosis, as Dr. Hansell pointed out in his paper, was the presence of erysipelas of the arm and back, which followed and did not precede the orbital symptoms. In the absence of a postmortem, however, this diagnosis could remain only as a suggestion.

Dr. Hansell said that the diagnosis which Dr. de Schweinitz suggested had been considered as a possibility, but the rapid development of the erysipelas of the body had led him to think the original condition was erysipelas of the orbit.

EMBOLISM OF THE CILIORETINAL ARTERY.

Dr. Krauss reported a case of embolism of the cilioretinal artery occurring in an 18-year-old schoolgirl. There was present a mitral murmur, and before ether anesthesia for the removal of a large adenoid an added faint presystolic murmur was ascertained. The vision was 5/30 eccentric, in the right or affected eye, and 5/4 in the left eye. Two weeks later the vision was 5/4 in each eye. The large scotoma first evident became gradually much smaller and now occupies a small section from near the fixation point to the 10° line at the temporal side.

The treatment consisted of deep massage, nitroglycerin gr. 1/100 every three hours, and absolute rest of the eyes.

PERSISTENT HYALOID ARTERY AND CANAL OF CLOQUET.

Dr. Krauss also reported this case, which presented the appearance of broad, dense bands extending from the extreme periphery of the nasal edge of the lens to the vessels on the disc. A thin, veil-like structure extended between these bands, the center of which was freely movable in the center of the vitreous. It contained a blood-bearing artery and vein. The vision was 5/4 in each eye, in spite of a hypermetropia of 1 D.

CONCERNING KERATITIS DISCIFORMIS, WITH A CASE.

Dr. de Schweinitz reported the clinical history of a patient under his observation for nineteen years, during which period there had been numerous attacks of recurring erosion of the cornea preceded by vesicle formation, the original lesion having been caused by an injury to the cornea from the switch of a horse's tail. In the last of the attacks, which occurred during this period of years, the broken-down bleb spread into an area of superficial keratitis which stubbornly resisted treatment for a number of weeks, and then developed into the typical appearance of keratitis disciformis, by the formation of a disc-like body within the layers of the cornea, at first giving the impression of edema surrounded by a sharply marked border, differentiating it from the rest of the cornea and crossed with delicate lines protruding somewhat from its margin in the form of riders. With the contraction and healing of the corneal defect the disc-like body increased in density, and has remained a disc-like opacity in the center of the cornea in spite of all treatment, although after several months of massage, notably with a dionin ointment, the stippling is little less dense than it was primarily, and the sharply marked border has somewhat faded, while the delicate striæ which conspicuously crossed its surface during the first forty-eight hours of its existence have entirely disappeared.

Dr. de Schweinitz, after reciting the history of this interesting disease, and referring to the American contributions on the same subject by Posey and Veasey, showed how exactly similar had been the origin and development of his own case to those which had been observed by Otto Schirmer as the result of inoculation of the cornea with vaccine virus. Drawings of the disease at various stages in its progress still further emphasized the analogy between these two observations.

TRAUMATIC IRIDOCYCLITIS AND LOCALIZED EDEMA OF THE MACULA.

Dr. de Schweinitz and Dr. C. M. Hosmer (by invitation) exhibited microscopic preparations from an eye removed on account of traumatic iridocyclitis resulting from a steel injury, and among other lesions demonstrated an advanced degeneration of the rods and cones and defect of the external nuclear layer, together with sharply localized edema of the macula. They compared their specimens with those which have been figured by Fuchs in traumatic iridocyclitis, in which he found cavities in the outer reticular layer, partly filled with coagulated fluid, which communicated with similar cavities in the nuclear layers, and which he regarded as due to an inflammatory edema. Similar observations of von Hippel in non-traumatic eyes were also described, and the opinion expressed, as these authors have already recorded it, that such lesions would account for the formation of the so-called "holes in the macula," which are well known after traumatism, and which have also been described a number of times in eyes entirely free from the suspicion of injury.

EDWARD A. SHUMWAY, M.D., *Clerk of Section.*

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

Prof. Dr. Bajardi has been called to the chair of ophthalmology at Siena.

Prof. Dr. Ovio has been appointed director of the University Eye Clinic at Modena.

Dr. Edward C. Sewall has been appointed oculist to the staff of the San Francisco County Hospital.

Dr. Frank E. Brawley, of Chicago, was married on April 24 to Miss Mary Vernon Wilson, of Detroit, Mich.

The staff of the Children's Memorial Hospital of Chicago have elected Dr. David Fiske to the eye and ear department.

Dr. G. W. Grove, of Kansas City, Mo., died recently in that city at the age of 53. He was well known as an ophthalmologist.

Dr. Randolph Brunson, of Hot Springs, Ark., has been elected treasurer of the Garland County-Hot Springs Medical Association.

Dr. Major H. Worthington, of Chicago, has been appointed alternate assistant surgeon at the Illinois Charitable Eye and Ear Infirmary.

Dr. Barck, of St. Louis, has been elected chairman of the recently reorganized section of ophthalmology of the St. Louis Medical Society.

At the thirty-second annual meeting of the American Academy of Medicine at Atlantic City, N. J., June 1 and 3, Dr. Casey Wood, of Chicago, will deliver the president's address, "A Medical Career and the Intellectual Life," and Dr. Leartus Connor, of Detroit, Mich., will speak on "The Commercial Life of Physicians."

Dr. Samuel G. Higgins, recently of St. Elizabeth's Hospital, Chicago, is now associated with Dr. H. V. Würdemann, of Milwaukee, Wis.

Prof. Dr. J. A. de Abren Fialko has been appointed professor of ophthalmology in Rio de Janeiro to succeed Prof. Pereira da Cunta, deceased.

Dr. H. Bert Ellis was elected a delegate to the American Medical Association at the recent annual meeting of the Medical Society of the State of California.

Prof. Galezowski, of Paris, is dead in his seventy-fourth year. He was born in Lipowitz, Poland, educated in St. Petersburg and practiced ophthalmology in Paris.

Dr. J. W. May, of Kansas City, Mo., responded to the toast "The Specialist" at the annual banquet of the Shawnee County Medical Society, held in Topeka, Kan., recently.

Dr. Frank J. Wakeman, after a post-graduate course in the east, has located in Kansas City, Mo., and will confine his practice to diseases of the eye, ear, nose and throat.

Prof. Dr. Karl Hess, of Würzburg, Germany, who is to deliver an address at Atlantic City this year, has received a call to become director of the eye clinic in Strassburg.

At a recent meeting of the California Public Health Association it was recommended that a law be passed appointing a physician to each school, and that one of his chief functions be to thoroughly examine the eyes and ears of the school children.

A special investigation of the trachoma question in New York by the oculists of the board of health shows that there are 8,700 cases of trachoma among the school children, instead of 10,000 as estimated in a previous report. The most successful line of treatment was found to be surgical, 70 per cent. of the cases thus treated were entirely cured.

Dr. J. W. Goode, of Winnipeg, Canada, recently spent a month in Chicago on his way home from Cuba. His confrère, Dr. S. W. Prowse, of Winnipeg, who had charge of Dr. Goode's practice during his absence, is now in Chicago visiting the clinics.

The proposal made recently at a meeting of the New York Board of Education to supply free spectacles to those who require them but are unable to pay for them, has aroused a storm of protests. It is generally believed that this course would be demoralizing and would tend to pauperize and at the same time would defeat its own end by lessening the importance of glasses. Protests have been made by the following charitable organizations: The Association for Improving the Condition of the Poor, the City Club, the Brooklyn Bureau of Charities, The Children's Aid Society of New York, and The Brooklyn Children's Aid Society.

The meeting of the Ophthalmologische Gesellschaft at Heidelberg for this year will be held on the 5th, 6th and 7th of August. On Sunday, Aug. 4, the president's meeting will be held in Prof. Leber's home at 6 p. m. After 8 p. m. there will be the informal gathering in the Stadtgarten. At 9 a. m. on Monday, Aug. 5, meeting at the University; at 2:30 p. m. demonstration meeting at the Physiologische-Institut in Academie Strasse; at 6 p. m. dinner in the Stadt halle. On Tuesday, Aug. 6, 9 a. m., meeting at the University; 12 m. meeting of members only; 3 p. m. second demonstration meeting. On Wednesday, Aug. 7, 9 a. m., meeting at the University. Manuscripts must be sent in between May 1 and June 30 to the secretary, Prof. A. Wagenmann, Jena.

The legislature of Delaware has passed a bill which permits opticians to "prepare eyes for testing" and "to test eyes and fit glasses to correct vision." The signature of the Governor is alone wanting to make the bill a law. It is the old story of the optician who wishes to practice medicine without the formality of preparation in a recognized college of medicine and who does not scruple to prostitute the law to suit his ends. The optometry bill, after many failures, has been passed by our legislature in Illinois. It provides for the establishment of a board of optometry which shall control the licensing of opticians. If the requirement of a thorough course on the anatomy, physiology, etc., of the human body were made a *sine qua non* for the practice of any healing method upon the human body fads would soon be educated out of existence.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesdny.	Thursday.	Friday.	Saturday.
9 A.M	Richard S. Pattillo (P.-G.) J. F. Burkholder, (E.E.N.T.)	G. W. Mahoney (Poli.) *Geo. F. Suker (P.-G.)	J. Elliot Colburn (E. E. N. T.)	G. W. Mahoney (Poli.) Richard S. Pattillo (P.-G.) J. F. Burkholder (E. E. N. T.)	Richard S. Pattillo (P.-G.)	G. W. Mahoney (Poli.)
10 A.M.	Oliver Tydings (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	Oliver Tydings (E. E. N T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
11 A.M.	....	A. G. Wippern (E. E. N. T.)	....	A. G. Wippern (E. E. N. T.)	....	A. G. Wippern (E. E. N. T.)
1 P.M.	....	Willis O. Nance (C. C. S.)	.. ..	Willis O. Nance (C. C. S.)	.. ..	Willis O. Nance (C. C. S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. A. Payne (Ills. Med.) N. E. Remmen (Inf.) Emily Selby (Inf.) Cassins Wescott (Rush) *H. W. Woodruff (Inf.) N. A. Young (Inf.) C. G. Darling (N. W. U.) Chas. P. Small (N. W. U.) Alex. P. Horwitz (N. W. U.) Francis Lane (Rush) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Clarence Heath (N. W. U.) Geo. T. Jordan (N. W. U.) Richard Tivnen (N. W. U.) Geo. F. Suker (Rush) M. H. Lebensohn (P. & S.)	E. V. L. Brown (Inf.) W. A. Fisher (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) N. A. Young (Inf.) C. G. Darling (N. W. U.) Chas. P. Small (N. W. U.) Alex. P. Horwitz (N. W. U.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) E. J. Gardner (E E. N. T.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Clarence Heath (N. W. U.) Geo. T. Jordan (N. W. U.) Richard Tivnen (N. W. U.) Francis Lane (Rush) M. H. Lebensohn (P. & S.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Cassins Wescott (Rush.) H. W. Woodruff (Inf.) N. A. Young (Inf.) *C. G. Darling (N. W. U.) *Chas. P. Small (N. W. U.) *Alex P. Horwitz (N. W. U.) Geo. F. Suker (Rush) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Casey Wood (N. W. U.) *Oscar Dodd (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) W. A. Fisher (E. E. N. T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. H. Williams (Inf.) Clarence Heath (N. W. U.) Geo. T. Jordan (N. W. U.) Richard Tivnen (N. W. U.) M. H. Lebensohn (P. & S.)
3 P.M.	W. Allen Barr (C. C. S.) *Wm. E. Gamble (P. & S.)	H. H. Brown (Ills. Med.)	*J. E. Harper (P. & S.) W. Allen Barr (C. C. S.) *Wm. E. Gamble (P. & S.)	Burton Hazeltine (County)	W. Allen Barr (C. C. S.)	Brown Pusey (County)
4 P.M.	W. T. Coleman (P.-G.)	C. W. Hawley (P.-G.)	O. F. Suker (P.-G.)	C. W. Hawley (P.-G.)	W. F. Coleman (P.-G.)	Geo. F. Suker (P.-G.)

*Special operative eye clinics.

ABBREVIATIONS.

C. C. S.: Chicago Clinical School, 819 W. Harrison Street.

E. E. N. T.: Chicago Eye, Ear, Nose and Throat College, Washington and Franklin Streets.

County: Cook County Hospital, W. Harrison and Honore Streets.

Ills. Med.: Illinois Medical College, 182 Washington Blvd.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

Poli.: Chicago Policlinic and Hospital, 174 E. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

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Original Articles.

DOUBLE PERFORATION OF THE EYEBALL BY IRON AND STEEL.*

William M. Sweet, M.D.
PHILADELPHIA.

It is not uncommon in injuries of the eyeball from small shot and from particles of exploded dynamite caps for the foreign body to pass completely through the globe into the orbit. Double perforation of the eye by splinters of iron or steel is, however, comparatively rare, as the metal seldom enters the eyeball with a force equaling that imparted by powder or other explosives. Prior to the use of the Roentgen rays in the localization of foreign bodies it was impossible to determine perforation of the posterior scleral wall except in instances in which the wound of exit of the body from the eyeball could be seen with the ophthalmoscope, or where enucleation was done and the body found in the orbit. Two cases are reported, one by Hirschberg[1] and one by Seggel,[2] in which the diagnosis was made by the ophthalmoscope, the wound of exit of the metal being plainly seen in the fundus. Kraus,[3] in reporting a case in 1904 of a large splinter of steel which passed through the eyelid and spitted the globe, could find but 24 previously reported cases of double perforation by iron and steel. It is probable that the number of injuries of this nature was greater than these figures indicate, but the precise character of the traumatism was not recognized owing to the imperfect means of diagnosis employed.

The cases of double perforation which are given in this paper include injuries from iron and steel, and one from brass, the class of traumatisms that occur in industrial establishments or in occupations requiring the use of machines or tools in working these metals. The subject of gunshot injuries has been fully considered recently by Marple,[4] so that traumatisms of this character and those from dynamite or other explosives have been eliminated.

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* Read at the Washington meeting of the American Ophthalmological Society, May, 1907.

[1] Central. f. p. Augen., January, 1903.

[2] Klin. Monats. f. Augen., July, 1903.

[3] Zeitsch. f. Augen., No. xi, 1904.

The cases here presented have been divided into two groups, the first comprising those in which the radiographs showed the body to have lodged in the posterior scleral wall, a portion of the metal protruding through the sclera into the orbit; and the second group, those in which the metal passed completely through the eyeball into the orbit.

Many of the patients were referred to me for *x*-ray localization, and I am indebted to the gentlemen who are named in the individual history of each case for the subsequent history which they have supplied of the results of operation and treatment.

The detailed history of the cases of partial double perforation are as follows:

Case 1.—Partial perforation of posterior scleral wall by a large piece of steel. Removed by forceps. Eye quiet three months later.

Joseph C., came to the Wills Hospital, service of Dr. C. A. Oliver, May 1, 1901, with injury of the right eye received one week previously. Examination showed a scar of the cornea in the horizontal plane, close to the nasal limbus. Radiographs located a metal body, 6 by 2.5 mm., imbedded in the scleral wall, below the disc, one end of the metal extending a distance of 3 mm. into the orbit. Operation through an opening between the external and inferior rectus muscles. The small Hirschberg magnet failed to secure the body, and it was removed by forceps. Three months later the eye was quiet. The man has since disappeared from observation.

Case 2.—Piece of cast iron, 13 by 6 mm., perforated posterior scleral wall. Removed by forceps. Enucleation.

Joseph H. was injured in the right eye five weeks before coming to the Wills Hospital, service of Dr. William McClure, on Aug. 25, 1902. There was a scar of the cornea, 10 mm. long, extending through the lower temporal limbus, the lens cataractous, and the eyeball tender. Radiographs showed a metallic body, 13 by 6 mm., situated at the posterior portion of the vitreous chamber, slightly below the horizontal plane to the temporal side of the globe, one end of the metal projecting through the sclera into the orbit a distance of 8 mm. The magnet was entered through a scleral opening, and, although it attracted the iron, it was only dislodged by means of forceps and scissors. Enucleation one month later for iridocyclitis.

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[4] Section on Ophth., A. M. A., 1906.

CASE 3.—Perforation of the posterior scleral wall by a piece of steel, 14 by 1.5 mm. Panophthalmitis. Enucleation.

William D. entered Pennsylvania Hospital, service of Dr. George C. Harlan, Feb. 4, 1903, with injury of the right eye by a splinter from a steel sledge, received two days previously. Central perforation of the cornea. Radiographs showed a piece of metal, 14 by 1.5 mm., slightly above the optic disc, one of the sharp ends extending through the sclera into orbit a distance of 7 mm. Panophthalmitis developed, and the globe was removed. The metal was found in the position indicated by the radiographs.

CASE 4.—Piece of steel, 10 by 3 mm., perforated posterior scleral wall. Patient refused operation and disappeared.

Louis I. came to the Wills Hospital April 23, 1903, service of Dr. S. Lewis Ziegler, with inflammation of the right eye, due to an injury received three weeks previously while striking a steel chisel with a large sledge. A scar of the cornea was seen in the lower outer portion, and the lens was opaque. The *x*-rays showed a metallic body, 10 by 3 mm., perforating the posterior scleral wall, above and to the temporal side of the macula. The difficulty of extracting the body was explained, with the possible loss of the eyeball, but the man refused operation and disappeared.

CASE 5.—Injury by piece of steel, 9 by 2 mm., which penetrated one-half through the sclera posteriorly. Removal three weeks later. Iridocyclitis. Enucleation.

William F. was injured in the left eye Sept. 10, 1905, by a piece of steel from a cutter he was holding while another workman was sledging. Entered Wills Hospital Oct. 15, 1905, service of Dr. McCluney Radcliffe, who found a scar of the cornea, 4 mm. long, near limbus, temporal side. Radiographs showed a piece of metal, 9 by 2 mm., situated in the lower inner quadrant of the globe posteriorly, the sharp end of the metal extending through the sclera into orbit a distance of 3 mm. Operation, three days after injury, through an incision in sclera, the point of the 110-volt hand magnet entered to indicated spot. The body was secured after several attempts, with mass of exudation which surrounded it. The eye failed to become quiet, and was removed for iridocyclitis three weeks later.

CASE 6.—Perforation of posterior scleral wall by a piece of steel, 12 by 4 mm. Extraction by magnet. Recurring hemorrhages six months later. Enucleation.

Patrick R. entered Wills Hospital, service of Dr. William Zentmayer, Oct. 10, 1906, with injury of the left eye received six hours previously while chipping a rivet. There was a large cut through upper lid, an incised wound of eyeball, and hemorrhage into the vitreous. Radiographs located a metal body, 12 by 4 mm., situated above the disc to the nasal side, the sharp end of the body extending through the posterior scleral wall into orbit a distance of 5 mm. The Haab magnet was brought close to the original wound, but failed to dislodge the metal. The point of the 110-volt hand magnet was then inserted to the indicated position of body, and attracted the metal, but failed to remove it. The Haab magnet was again tried and the body secured. Six months later the eye was irritable, a depressed cicatrix existed at the point of entrance of the body, and there were recurring hemorrhages into the anterior chamber. Enucleation was advised.

Case 7.—Chip of steel, 14 by 4 mm., penetrated partly through posterior scleral wall. Panophthalmitis. Enucleation.

Harry M. entered Wills Hospital, service of Dr. C. A. Oliver, Oct. 15, 1906, with injury of the left eye received two weeks previously while chipping a locomotive cylinder. Examination showed a scar in the sclera, in the lower outer portion, about 4 mm. from the limbus. Radiographs located a metal body, 14 by 4 mm., half moon-shaped, situated between the disc and the macula, one of the sharp triangular ends projecting 3 mm. through the posterior scleral wall into the orbit. No attempt was made to extract the metal, as purulent iridocyclitis had developed, and the globe was removed. The position of the metal corresponded to the situation shown by the radiographs.

Case 8.—Splinter of cast steel, 6 by 6 mm., shown by x-rays to have penetrated partially through posterior scleral wall. Attempts at extraction failed. Enucleation.

Morris W. was injured in left eye Dec. 22, 1906, while chipping a steel casting. Entered Wills Hospital December 28, service of Dr. S. Lewis Ziegler, who found a wound of the upper lid and of the sclera beneath, hemorrhage into vitreous and imperfect l. p. Radiographs located a metal body, 6 by 6 mm., 25 mm. back of corneal center, 5 mm. above horizontal plane and 3 mm. to nasal side of vertical plane, indicating partial perforation of posterior scleral wall. Operation through scleral incision December 31. The Haab magnet at opening failed to attract body. The point of 110-volt hand magnet was then passed several times to the indicated situation of the body, but failed to secure the metal. Dr. Ziegler then dissected an opening to the posterior portion of the globe, but no response was obtained to the magnet point in this situation. The man refused enucleation and was discharged from the hospital. On Jan. 18, 1907, he came to the University Hospital, service of Dr. G. E. de

Schweinitz, and consented to removal of the eyeball if the metal could not be secured. Magnet extraction failed and the eye was enucleated. The metal was found in a mass of exudation at the posterior portion of the vitreous chamber, close against the sclera, but no portion was found projecting through into orbit. There was, however, considerable thickening of the tissue over the orbital surface of the sclera at the point at which the body was shown by the radiographs to have perforated the globe. Until microscopic sections are made it is impossible to determine if the sclera had been perforated posteriorly, as indicated by the *x*-ray localization, but it is possible that the attractive power of the magnets used was sufficient to withdraw the metal from its scleral bed, but could not disengage it from the exudation which had formed about it.

CASE 9.—Chip of steel seen with ophthalmoscope in retina between the disc and macula. Body disappeared from view after several applications of Haab magnet. Subsequently localized by radiographs in orbit back of eyeball.

The history of this case has been fully reported[5] by Dr. Herman Knapp and Dr. Lewis H. Taylor, but is included in the series which have come under my observation for radiographic examination. The case is of interest, as the splinter of steel, which was seen in the retina, between the macula and the disc, failed to come forward under several trials with the Haab magnet, and later disappeared from its first position. Radiographs subsequently located the metal in the orbit, close to the eyeball. The passage of the metal from its position as seen with the ophthalmoscope out into the orbit can only be explained by the attraction of the magnet, which was placed at the nasal side of the sclera, acting upon the end of the body protruding through the sclera, and causing the splinter to pass out into orbit.

With the exception of Case 9, the metal inflicting the injury was in every instance of large size, varying from 6 by 2.5 mm. to 14 by 4 mm. Of these 8 cases the eyeball was lost in 5, 2 from panophthalmitis and 3 from iridocyclitis, and in another case enucleation will be required for recurring hemorrhage into the anterior chamber. The subsequent history of the remaining two cases is not known, one in which the metal was secured by forceps and one who refused operation.

COMPLETE DOUBLE PERFORATION.

The cases in which the body passed completely through the eyeball into the orbit are as follows:

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[5] Trans. American Ophth. Soc., 1906.

Case 10.—Perforation of the eyeball by a piece of steel, 3 by 1 mm. Attempts to extract metal failed. Eye quiet two years later.

G. P. was injured in the left eye twelve days before coming to the Wills Hospital, service of Dr. P. N. K. Schwenk, on June 15, 1901. He was engaged in welding an axle, the helper striking the cooling metal with a large sledge, and a piece of the latter struck the eyeball, causing a wound of the sclera in the lower outer quadrant, near the limbus. Radiographs located a metal body, 3 by 1 mm., in the lower temporal portion of orbit back of globe. Attempts to remove the body failed. Two years later the eyeball was quiet.

Case 11.—Piece of steel, 10 by 5 mm., passed through eyeball into orbit. Attempts to extract metal followed by collapse of globe. Enucleation.

William J. came to Wills Hospital, service of Dr. McCluney Radcliffe, Aug. 3, 1902, with an injury of the left eye received two days previously while splitting wood with a steel wedge, which he struck with a large sledge-hammer. There was a large wound of the cornea, and the lens was swollen and cataractous. Radiographs located a piece of metal, 10 by 5 mm., at the upper and inner portion of the orbit, outside the eyeball. An attempt was made to secure the body, but the corneal wound opened and the eyeball collapsed and was removed. The steel was found to have passed through the eyeball and lodged at the point indicated by the radiographs.

Case 12.—Two pieces of steel localized by the *x*-rays, one in the eyeball and the other in the orbit. Panophthalmitis. Enucleation.

C. L. was injured in the right eye two days before coming to the Jefferson Hospital, service of Dr. H. F. Hansell. Radiographs located two bodies, one in the anterior portion of the eyeball and the other in the orbit back of the globe. Panophthalmitis developed, and the eyeball was removed. Both bodies were found by the magnet at the positions indicated by the radiographs, the metal in the orbit proving to be a splinter from the hammer, which had perforated the globe, and the ocular piece a chip from the tool held by the workman.

Case 13.—Piece of steel, 10 by 2 mm., passed through eyeball and lodged in upper portion of orbit. Extraction not attempted. Eye quiet, but slightly shrunken three years after injury.

Hooper D. was referred for *x*-ray examination by Dr. J. A. Ellegood on Feb. 25, 1903. The patient gave a history of injury of the right eye ten days previously while helping in a blacksmith shop to sledge cold steel. There was a large scar in the cornea and the lens was opaque. Radiographs showed a piece of metal, 10 by 2 mm., situated 14 mm. above the horizontal plane of the globe, one of the ends of the body 21 mm. and the other 31 mm. back of the corneal center. No operation was attempted. Three years after injury the eyeball was slightly shrunken, but the man suffered no discomfort.

Case 14.—Small splinter of steel localized in the sclera below the disc. Extraction attempted, but failed. Subsequent enucleation showed body to be in orbit, outside of eyeball.

Charles W. consulted Dr. C. S. Merrill, of Albany, N. Y., on Aug. 19, 1904, with injury of the right eye received while striking a chisel with a hammer. He came to New York City, and the Haab magnet was tried without response, and he was referred to the author for *x*-ray examination and treatment by Dr. C. W. Cutler. Radiographs made by my assistant localized a piece of metal, 2 by 1.5 mm., at the fundus, slightly below the macula and close against the sclera. An attempt was made on August 26 to extract the metal with the magnet, but failed. The patient refused enucleation and returned to his home. Iridocyclitis developed, and on September 23 the eyeball was removed by Dr. Merrill, who wrote that the body was found imbedded under the tendon of the inferior oblique muscle.

Case 15.—Small piece of steel passed through eyeball and lodged in orbit. Extraction failed. Eye quiet.

John R. was injured in the right eye on June 1, 1904, while chipping cast steel, and came to the Episcopal Hospital two days later, service of Dr. W. T. Van Pelt. There was a wound of the sclera to the temporal side, and the vitreous was hazy. Radiographs made at the hospital indicated that the metal was in the orbit, and extraction was attempted but failed. Two weeks later the patient was sent to the writer for localization, and the body was found to be situated in the upper temporal portion of the orbit, back of the eyeball. No further operation was attempted, and the eye has remained quiet.

Case 16.—Small strand of brass wire passed through eyeball and lodged in orbit. Eye quiet two years after injury.

Thomas W. came to the Polyclinic Hospital, in the author's service, on Dec. 26, 1904, with ecchymosis of the right eye following a blow from a snowball. After having been under treatment for ten days he complained that the sight of the left was failing. Examination showed a blood clot in the vitreous and a small hemorrhage in the upper temporal quadrant of the retina. Externally a spot of hemorrhage beneath the conjunctiva in the lower outer quadrant, 4 mm. from the limbus, pointed to the possible entrance of a foreign body. Inquiry developed that the day previously he was winding the spring of an antique clock, the brass wire cable of which parted, and the drum rapidly unwound, causing the end of the broken cable to repeatedly strike one of the cross supports of the works. The boy stated that he had felt a spark strike the face, but was unaware of injury to the eye. Radiographs located a strand of the wire cable, 4 mm. long, and extremely thin, in the orbit, 5 mm. back of the eyeball and in a line corresponding with the spot of retinal hemorrhage, which marked the point of exit of the metal after traversing the length of the globe. The boy was kept under observation, the hemorrhage in the vitreous absorbed, and vision returned to normal. Two years after the injury the brass in the orbit had caused no symptoms.

Case 17.—Small splinter of iron passed through eyeball into orbit. One year later eye quiet, vitreous slightly hazy; retinal detachment.

John C. came to the Wills Hospital, service of Dr. C. A. Oliver, on Feb. 10, 1905, with injury of the left eye received while chipping a grip-pin. Wound of the eyeball near insertion of the internal rectus, blackish mass in vitreous extending over nasal side of disc, and retina hazy. Radiographs located a metal body, 2 by 1 mm., situated 27 mm. back of the corneal summit, in horizontal plane of globe, and 10 mm. to the nasal side of vertical plane. Magnet gave no reaction. Eye became quiet, and one year after injury retinal detachment could be plainly seen through the fine vitreous opacities.

Case 18.—Splinter of steel passed through eyeball into orbit. Eye quiet for three months. Low grade iridocyclitis developed and globe was enucleated. Thin fibrous band extending from eyeball back into orbit.

A. J. was injured in the right eye on March 20, 1905, by a splinter from a sledge. Sight was immediately lost, but gradually returned so that large objects could be recognized, and the congestion of the eyeball subsided. Three months after the injury the eye again became inflamed, when he was seen by the writer. Vision equaled imperfect light perception, vitreous hazy, eyeball slightly tender, with evidences of low grade iridocyclitis. Radiographs located a metal body, 4 by 2 mm., situated 29 mm. back of the corneal center and slightly below and to the temporal side of the optic nerve. The inflammatory symptoms failed to subside under treatment, and the globe was enucleated. On the posterior scleral wall, at the probable point of exit of the metal from the globe, there was a mass of thickened tissue, to which was attached a thin fibrous band which appeared to have extended backwards into orbit. The metal was found by the magnet surrounded by a firm fibrous mass, and it is probable that the band cut in the removal of the globe connected this mass with the eyeball.

Case 19.—Double perforation by a piece of steel drill. Eye quiet one year after injury.

T. B. was injured in the right eye on April 18, 1905, while using a sledge and drill in quarrying stone. There was a large scar in the sclera at the limbus and the lens was opaque. Radiographs located a piece of steel, 4 by 2 mm., back of the eyeball, to the nasal side of the orbit. No attempt was made to extract the steel, and one year after injury the eye was perfectly quiet.

Case 20.—Piece of hammer head passed through eyeball and lodged in sheath of optic nerve. Enucleation.

Gerald H. entered Wills Hospital, service of Dr. Frank Fisher, on April 11, 1906, with injury of the left eye received twenty-four hours previously. The patient stated that he was attempting to remove a board nailed to the floor by placing the edge of one hatchet beneath the strip of wood and striking the head of the hatchet with a hammer. Immediately following a strong blow upon the hatchet he felt pain in the eye and sight was dimmed. Examination showed a vertical wound near the center of the cornea, the anterior chamber shallow, and the lens cataractous and swollen. No view of eyeground. Radiographs indicated a piece of metal, 4 by 3 mm., situated 25 mm. back of center of cornea, 2 mm. below horizontal plane, and 4 mm. to nasal side of vertical plane. No pain upon application of giant magnet. The eyeball continued tender, and enucleation was performed. Surrounding the optic nerve was a mass of infiltration which responded to the magnet. The fragment of steel was found in the sheath of the nerve to the outer side, giving the appearance of having perforated through the nerve head.

Case 21.—Small splinter of steel located in orbit back of globe. Lens cataractous. Eye quiet three years after injury.

John F. consulted Dr. McCluney Radcliffe on Oct. 18, 1906, for treatment of a cataract of the left eye. Inquiry developed that the eye had been injured three years previously while striking a drill with a hammer. The patient did not believe that any metal had entered the eye. There was a small tear in the iris in upper portion, near pupillary border. Radiographs located a metal body, 2 by 2 mm., in the orbit, 3 mm. back of the eyeball and slightly above the horizontal plane. The eye was quiet, and the patient decided to postpone any operation upon the cataract.

Case 22.—Piece of steel passed through eyeball into orbit. Purulent iridocyclitis. Patient refused enucleation.

Joseph C. was injured in the left eye on Dec. 31, 1906, while striking a steel set with a heavy hammer. Examination a few huors after injury by Dr. E. S. Saylor showed a wound in the lower inner portion of the sclera; vitreous filled with blood. Radiographs located a piece of metal, 4 by 1 mm., in the lower inner portion of orbit, close to the eyeball. The magnet at wound of entrance of body gave no pain. The man refused to enter hospital for treatment, removed the aseptic bandage as soon as he left the institution, and reported twenty-four hours later with beginning panophthalmitis. He refused enucleation and was discharged.

Of the above thirteen cases in which the metal passed completely through the eyeball into the orbit, the globe was lost in five instances, two because of panophthalmitis, one from iridocyclitis, one from collapse of the ball following an attempt to extract the metal, and one in which extraction failed.

It is unnecessary at this time to dwell upon the importance of *x*-ray examination in every instance of ocular injury from foreign bodies. In no other way is it possible for the surgeon at the time of injury to determine that perforation of the posterior scleral wall has occurred. With care in determining the fixed points from which measurements are made, the *x*-ray operator should be able in every case to indicate whether a body has penetrated partly or completely through an eyeball that corresponds in its dimensions with the average adult globe of 24 mm. in its antero-posterior diameter, which is the size employed in the diagrammatic charts used in localization. Any variation in the size of the eyeball under examination will, however, affect the position of the metal in reference to the posterior scleral wall as indicated on the chart, although there is always a possibility of error in localization from carelessness in measuring the distance separating the indicator and the center of the cornea. High degrees of refractive error must influence the size of the eyeball, as has been pointed out by Hansell.[6] Moreover, Stilling,[7] from studies of the size of normal eyes of adults, shows that considerable variation is present irrespective of refraction. From a large number of eyes examined he found that the longitudinal diameter varied from 20 to 25 mm., the transverse diameter from 20 to 26 mm., and the vertical from 20 to 24 mm. In three eyes, one of which was myopic (4 D.), one hyperopic and a third emmetropic, the length of each was the same, 24.5 mm., and the vertical and transverse diameters were nearly equal.

The accuracy of localization is shown in Cases 3 and 7, the extent of the perforation of the metal through the posterior sclera as indicated on the diagrammatic charts corresponding to the measurements made after the eyeballs were removed.

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[6] Trans. Coll. Physc. of Phila., Jan., 1906.

[7] Zeitsch. f. Augen., No. xiv, p. 23.

The possibility of error is seen in Case 14. The piece of steel, which was of small size, was localized at the posterior portion of the eyeball, imbedded in the chorioid, whereas the metal upon enucleation of the eye was found to have passed into the orbit and rested close to the sclera adjacent to the point of localization.

An instance of error in localization due to the size of the eyeball is reported by Marple.[8] The foreign body was located by Dixon just outside of the sclera, but proved to be inside the eyeball. Subsequent study of the patient, who was a man, 6 feet 2 inches in height, showed an eyeball 26 mm. in diameter. A knowledge of this fact at the time of localization would have placed the body inside the eyeball instead of outside the sclera in the orbit.

Foreign bodies that lodge in the orbit usually cause no ocular symptoms. Disturbance is more likely to arise from bodies that are situated close to the posterior scleral wall in the region of the ciliary nerves. The importance, however, of keeping under observation for a considerable period all cases of foreign bodies lodged in the orbit back of the eyeball is shown in the history of Case 19. The acute inflammation following the injury subsided, but returned after a period of three months, and was associated with iridocyclitis that compelled the removal of the eyeball. Whether the recurrence of the inflammation was due to the primary injury to the internal structures of the eye, or was influenced by the band of tissue connecting the eyeball with the fibrous mass surrounding the metal, is a matter of conjecture, but the possible shrinkage of this tissue mass and the pull it exerted upon the orbital nerves with each rotation of the globe must have had an important effect in keeping up a continued irritation to the entire ocular structures. Some years ago I saw a somewhat similar case in which I localized, for Dr. S. D. Risley, a bird-shot that was lodged back of the eyeball. Two months after the injury the eyeball was the seat of almost continuous pain, and upon enucleation a thick cord was found to have passed from the posterior surface of the sclera back into the orbit.

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[8] Section on Ophthalmology, A. M. A., 1906, p. 421.

THE INACCURACIES OF TEST LENSES.

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MONTREAL, QUE.

Repeated observations having convinced me that several of the lenses of my test-cases which I purchased from a well-known English firm were inaccurate, I had Mr. R. N. Taylor, of this city, undertake a minute and careful analysis of all the glasses in the cabinet. His findings, which are given below, were, to say the least, such as would make one doubt the correctness of one's results.

ANALYSIS OF THE ENGLISH CASE.

(*a*) Spheres off center 1 mm. or under: —1.25, —4.00, —2.75, —3.00, —12.00, —13.00, —0.25, —0.50, —0.75, +1.50, +2.75.

(*b*) Spheres off 2 mm.: —1.00, —1.00, —0.50, —1.50, —2.00, —0.25, +1.00.

(*c*) Spheres "away off" center: —0.25, —0.75, —1.25.

(*d*) Cylinders off in their axes: —5.00, —5.00, —2.75, —2.50, +3.00, +1.75, +1.25, +3.00, +4.00, +5.00, +5.50, +6.00.

But my second experience was even more unsettling and has led me to draw the attention of the profession to what may be a very common source of error.

I had decided, prior to Mr. Taylor's examination, to use my old case for skiascopy (I work always with cylinders and spheres) and purchase a new one for refraction work, with improvements, as recently suggested by one of our well-known colleagues. To avoid the defects of the first case I asked the firm, one of the best known in America, to guarantee the correct centering of all the lenses; but this they absolutely refused to do, notwithstanding my offer of a higher price to have it done. We decided, therefore, to order the case and to correct the defects in Montreal after submitting the glasses to a painstaking analysis. While errors were expected, we were astonished at the number and grossness of the defects. The findings in this instance, which I have had Mr. Taylor state more specifically, denote, I think, a truly rotten state of workmanship in the American optical business.

ANALYSIS OF THE AMERICAN TEST CASE.

(*a*) Spheres off 1 mm. to 1½ mm.: —1.50, —1.00, —5.00, —5.50, —6.00, —7.00, —7.50, —8.50, +0.37, +0.62, +2.25.

(*b*) Spheres off 2 mm.: —0.50, —0.75, —0.25, +0.75, +0.75.

(*c*) Spheres "very badly" centered: —0.37, being off 7 mm.; —0.25, the same; —1.87 over 3 mm.; —1.00 3 mm, —0.50 over 3 mm.; +0.25 over 4 mm.

(*d*) Cylinders off 2½ degrees in their axes: —4.25, —3.75, —3.50, —3.00, —1.75, —1.50, —1.37, —0.87, —0.75, —2.50, —1.00, —2.75, +0.25, +0.62, +3.25, +3.50, +4.50, +4.75.

(*e*) Cylinders off 5 degrees in their axes: —4.75, —2.75, —2.00, —1.62, —1.25, —0.37, +0.25.

(*f*) In addition to the above the +1.37 cylinder was off 7 degrees and the +0.12 cylinder 40 degrees! Also in the place of the —4.50 there was a —2.25, making three —2.25 lenses in the case and only one —4.50.

It is axiomatic that without accurate trial lenses accurate refraction and muscle work is impossible. I believe from these experiences that every oculist will find errors—even gross defects—in his trial case, and that the detection of these will explain many inconsistencies which he has heretofore observed. The matter is worthy of serious attention.

DELAYED DEVELOPMENT OF THE LACRIMAL-NASAL DUCT.*

EDWARD JACKSON, M.D.

DENVER.

Lacrimal obstruction manifest immediately after birth, or so soon as the secretion of tears is fairly begun, should be regarded as due to delayed development of the nasal end of the lacrimal duct, unless evident disease within the nose or in parts immediately adjoining the lacrimal passages offer a different explanation of the case.

In nineteen autopsies on new-born children, de Vlacovich[1] found four cases in which the orifice connecting the lacrimal drainage canal with the nose had not yet been opened. Rochon-Duvigneaud,[2] among thirty new-born or still-born children, found three in which this orifice being still closed, the lacrimal duct was so distended as to displace the inferior turbinal. In one of these cases one complete and several partial septa obstructed the passage higher up.

The lacrimal drainage apparatus originates in a linear epithelial thickening which becomes embedded in the mesoblast forming a rod or cord of epithelium, which at one time becomes entirely separated from the epiblast (Monesi[3]). This rod, budding at its upper end, develops the canaliculi (Matys[4] and Fleischer[5]), which extend to connect with the epiblast of the lid margins (Küsel[6]). At the lower end of the passages the epithelial rod comes in contact with the mucous membrane lining the nasal cavity.

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* Read before the joint meeting of the Western Branch American Laryngological, Rhinological and Otological Society and the Colorado Ophthalmological Society.

1. de Vlacovich, J. A.: Beiträge zur Augenheilkunde, 1892.
2. Rochon-Duvigneaud: Archives d'Ophtalmologie, February, 1899.
3. Monesi: Klinische Monatsblatter für Augenheilkunde, January, 1904.

In this epithelial rod a lumen is formed as early as the third month, probably by separation of the cells rather than by necrosis. This lumen is occupied by a gelatinous or pasty material in which the scanty cell elements appear to be leucocytes. Into the lumen of the tear passages project valve-like folds or septa, which subsequently atrophy, or, in exceptional instances, remain throughout life. It is possible at birth to have the tear passages thus obstructed at any point in their course. But the usual point of occlusion is the opening into the nose.

The lacrimal secretion is not noticeable, usually, for several weeks after birth. The canaliculi may at this time not be patulous. No functional demand is made upon the lacrimal passages, and it is probable that in many cases of delayed opening of the duct into the nose no symptoms whatever are noticed, the opening occurring after birth, but in time to meet any demands for it.

The cases in which symptoms arise are those in which the canaliculi are open; extraneous material reaches the retained contents of the lacrimal sac; infection occurs, and the usual symptoms of dacryocystitis develop. The sac is found distended. There is regurgitation on pressure. Often symptoms of inflammation about the sac occur, and usually some lacrimal conjunctivitis.

When these symptoms are discovered it should be borne in mind that the destruction of the septum between the lacrimal duct and the nose is a process of physiologic development, going on most actively at this time and liable to be completed any day. In the absence of imperative indications to do otherwise we should, therefore, await its completion, meanwhile controlling the inflammatory process as well as possible by palliative treatment.

This palliative treatment includes frequent, careful pressing out of the contents of the sac, and the use of a solution of protargol 2 per cent., or argyrol, 5 per cent., at short intervals. This is to be kept up by the mother at home. The pressure is transmitted to the obstructing septum and also gives drainage to the sac. The solution tends to limit and remove infection. In my hands this treatment has generally been completely successful, although in a few cases it has been necessary to continue it several months before such a result was brought about. The following is one of these cases:

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[4] Matys: Zeitschrift f. Augenheilkunde, September, 1905; October, 1906.

[5] Fleischer: Graefe's Archiv f. Ophtalmologie, lxii, 3.

[6] Küsel: Festschrift von Hermann Kuhnt, Zeitschrift f. Augenheilkunde, 1906.

M. C. S. was brought to me when 8 weeks old. The history was that tears ran over her cheek from the left eye when a week old, and recently from both eyes. There was a moderate muco-purulent discharge from both eyes, with slight conjunctival hyperemia. The left eye had been distinctly red. No tumor was noticeable in the region of the lacrimal sac. The puncta were normal. Pressure over each sac caused frequent regurgitation of muco-purulent material. Eyes otherwise normal. The protargol solution was prescribed for use six times daily after thorough emptying of the sac. A month later there was but little regurgitation from the right sac and sometimes none. The condition in the left eye remained unchanged, and in both the lacrimal conjunctivitis still continued. Three weeks after that there was sudden improvement in the left eye (previously the worse), quickly followed by disappearance of the lacrimal conjunctivitis. There continued slight regurgitation of stringy matter from the right at times, and some conjunctivitis in that eye several weeks longer. But by the time the child was 5 months old both eyes were entirely well. They have continued so in the five years that have since elapsed.

In other cases I have seen severe, acute dacryocystitis with general swelling of the region of the sac and the eyelids, which yielded to thorough pressing out of the contents of the sac and the instillations of strong solutions of protargol.

In some cases, however, radical treatment will become necessary. Heinemann[7] points out that in these cases the accumulated material being always infected, and generally purulent, any abrasion of the cornea might endanger the eye. Cutler[8] has observed in some cases that the infant's nutrition seemed to have been affected to some extent, at least the children were less restless and took food better when a normal condition was brought about. For these reasons, and when it was necessary for the child to pass from under observation, he has resorted to the slight operative measures required. Donald Gunn[9] has reported a series of cases in which lacrimal abscess occurred, and one in which the mucocele, after having persisted for two years, was cured by a single passage of the probe.

Jocqs[10] would endeavor to hasten the opening of the duct into the nose by the forcible injection of fluid. Weeks,[11] while urging simple cleansing of the conjunctival sac and protection of the parts until Nature has had a fair opportunity to establish a passage, holds that if this has not occurred at the end of two months, slight slitting of the canaliculus and the passage of a small Bowman probe should be resorted to. I would not limit to two months, or even six months, the period in which it is proper to try milder measures, provided the symptoms are controlled by such treatment.

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[7] Heinemann: Deutsche Med. Wochenschr., January 29, 1903.

[8] Cutler: Archives of Ophthalmology, May, 1903, p. 289.

[9] Donald Gunn: Ophthalmic Review, February, 1900.

[10] Jocqs: La Clinique d'Ophtalmologie, May 10, 1899.

[11] Weeks: Jour. American Medical Association, Dec. 10, 1904.

In cases of severe abscess radical treatment must be resorted to. The best I believe is to open directly through the skin into the sac and to pass the probe (5 or 6 Bowman) through this opening into and through the duct. If drainage be once established into the nose no lacrimal fistula will result, and the canaliculi will be left absolutely normal. If, from long continuance of the obstruction or for other reasons, probing is to be resorted to, when the dacryocystitis is not very severe, the punctum may be slit, and the probe introduced through the canaliculus. The canaliculus should not be slit to any extent. Slitting the punctum alone will permit the introduction of a probe sufficiently large (3 or 4 Bowman) for the purpose. The probing should be done thoroughly and not repeated, allowing the slit punctum to reunite and leaving the lacrimal drainage apparatus practically normal. Where mucous membrane, not readily penetrated by a probe, remains at the nasal orifice it may be possible to divide it against the tip of the probe through the nose. The points here emphasized are:

1. That lacrimal obstruction in the infant is due to delayed development of the tear passages, and can be expected commonly to terminate in spontaneous, complete and permanent cure. The establishment of a normal condition being usually rather sudden.

2. That when spontaneous cure has not occurred and conditions arise that make operative interference imperative, such an operation is to be chosen as will leave the puncta and canaliculi in practically normal conditions.

TREATMENT OF TRACHOMA.

JAMES BORDLEY, JR., M.D.

BALTIMORE.

In the treatment of trachoma I believe we are uniformly unsuccessful. That occasional isolated cases get well, either through the instrumentality of the surgeon or the intervention of Providence, is an undisputed fact. That no line of treatment, however, is uniformly successful is evidenced by the great mass of literature on this subject which has been published in recent years.

Over a year and a half ago I started to treat cases of trachoma by scarification. The evolution of the idea brought me from the use of a fine knife, with which I opened one granule after another, to a cotton-covered match stick and boric acid powder, with which I rubbed the lids until they bled. When I started this work it was entirely unknown to me that Priestley Smith had in his teaching advised this simple operation. Nor, in fact, was I aware of it until I saw an article by E. T. Smith in the *Australasian Gazette* of December, 1906. I gladly yield him the honor of priority and sincerely regret that I was not aware of his work years ago, as I believe I could have saved much suffering and poverty by applying his remedy.

That a uniform scarification of the lids results in cure in the early stages and complete relief from the suffering and ill consequences of the later stages I have thoroughly demonstrated to my own satisfaction. That lid scars clear up and pannus disappears to a large extent is quite as easy to prove.

By the simple rubbing of the everted lids with boric acid, carried on a cotton-wrapped match stick, a uniform scarification of the surface takes place. As a result the circulation of the lids is increased, the epithelium takes on more active growth, scar tissue is absorbed and its place taken by healthy lid tissue. Ulcers of the cornea due to infections of the pannus tissue and Bowman's membrane rapidly disappear: the persistent and intense photophobia is soon lost.

I have cases in which the linear scars in the lids, just starting, absolutely disappeared, and it is now a matter of impossibility to tell that trachoma was ever present, absolutely no trace of the disease now remaining. One case, infected in a mining camp in Pennsylvania six years ago, and who was so blind as to necessitate his being led around, is now at work on a farm in Virginia, and only recently wrote me that except for close work his sight was perfectly satisfactory. This man had a very large number of scars in his lids and some active granules, a large corneal scar in the right eye and an extensive pannus formation in the left eye. The pannus has disappeared and his corneal scar is about one-half smaller than when I instituted treatment. In this case the iris, either from excessive conjunctival irritation or from poor absorption due to the old inflammatory process, did not at first respond to atropin instillations, but as the case progressed the pupil became thoroughly dilated.

I propose later to give in detail the treatment of some twenty-five or thirty cases, but at present I am simply going to outline the treatment which I employ.

I instil in the conjunctival sac a 4 per cent. solution of cocain every five minutes for twenty or thirty minutes, evert the upper lid and rub until the conjunctiva bleeds rather freely, taking care to rub the tissue of the cul-de-sac with as great vigor as that of the tarsus. I have an assistant constantly dust on the boric acid so as to get the full benefit of the scarifying action of the small granules of the powder. I then evert the lower lid and rub with the same vigor and with as much boric acid. If there is an active pannus or ulcer I do not hesitate to rub them also, but with less vigor than I do the lids.

I have tried the addition of protargol solutions at the time of rubbing, but I failed to detect any difference in the results.

I believe the antiseptic properties of boric acid play no part in the beneficial effects of the rubbing, and I only use boric acid because the crystals are fine and sharp and because the powder is of just the proper consistency to make it easy to handle.

The lids are rubbed every day for two weeks, then every other day for ten days, and then as is found necessary to keep the process of relief or cure from coming to a standstill. The longest time that I found necessary to continue the friction was ten weeks.

I do not hesitate to rub the lids of both eyes at the same sitting because it produces little pain, which subsides in five or ten minutes after discontinuance of the scarification. The pain is not to be compared to that caused by bluestone or nitrate of silver solutions; it is very much less.

In the vast majority of cases the patients get great relief after the first or second sitting and are able to go about their usual duties in less than four weeks, if their sight was not much impaired previous to the treatment.

I sometimes order a 10 per cent. protargol solution to be used at home, more for the benefit of mind than the eyes, as I can see no difference in the result whether it is or is not used.

This is by all odds the most satisfactory and successful way of treating trachoma that I have ever seen employed either in this country or abroad.

Reports of Societies.

SECTION ON OPHTHALMOLOGY, AMERICAN MEDICAL ASSOCIATION.

Atlantic City, New Jersey, June 4 to 7, 1907.

ABSTRACT REPORT.

Cataract Extraction: 1. Is the Case Operable? II. Preparation of the Patient. III. The Anesthetic.

Dr. E. E. Jack, Boston, read this paper. Whether a case is operable, he said, must be decided from three standpoints—that of the general health, the condition of the eye and its surroundings and the state of the cataract itself. He thought there had been but little recent change in the accepted views on these points. Chronic heart, lung and kidney disease and diabetes were no longer considered bars to operation. The condition of the tear passage and nasopharynx were of great importance and were a source of danger not only in diseased condition, but to a certain extent in the normal condition as a channel of infection. Treatment did not relieve the condition of the tear passages; the sac should be extirpated. The question of whether the cataract was immature, hypermature, had to be considered. The preparation of the patient (general, physical, mental) and of the eye was fully considered. The thing of greatest importance was attention to the condition of the intestinal tract; the customary cathartic should be given the night before operation. The region around the eye should be well washed with soap and water and the conjunctival sac gently washed out with sterile water or normal salt solution. The present rule of the Massachusetts Eye Infirmary is to make the local preparations the night before, to put bichlorid ointment into the eye and on the lids, and a bandage. The essayist also lays stress upon the value of the mental preparation of the patient; he should be trained in just what to do and what not to do. Cocain was the most useful of the anesthetics.

The Incision for the Extraction of Cataract and the Iridectomy.

Dr. John E. Weeks, New York, considered the forms of the various incisions employed for the removal of cataract from the time of Daviel to the present, describing and illustrating them. The writer advocates an incision to the limbus, including two-fifths of the circumference of the cornea, finishing with a conjunctival flap. The advantages are: free escape of the lens; simple extraction, if desired; rapid healing. He favors preliminary iridectomy in certain difficult and hazardous cases, but, when the "combined operation" is to be performed, he performs iridectomy and removes the lens at one "sitting." Simple extraction is done in selected, favorable cases. The technique of iridectomy and the possible accidents were briefly described.

The Delivery of the Lens for the Extraction of Cataract; Irrigation of the Anterior Chamber and the First Toilet of the Wound.

Dr. L. Webster Fox, Philadelphia, reviewed the history of the delivery of the lens, described and illustrated different kinds of cystitomes and forceps, giving the opinion of many operators as to the method to pursue in the extraction of the cataract. Few changes have been made in the methods. The currents of the eye, the result of pressure, were illustrated and explained. He thought it was deleterious to allow cortical substance to remain, and his observation had been that the posterior capsule always grows denser and more obstructive to vision when cortical substance is allowed to remain in the anterior chamber. He used massage first, the Daniel curette second, then follows by irrigation if necessary. He thought the conservative instructors in ophthalmology would select the combined operation as the method to be taught and for younger ophthalmologists to follow; it would give the greatest number of perfectly successful results. He cleansed his instruments in diluted alcohol (alcohol one ounce, aquæ destillata three ounces); after immersing them in this solution for five minutes they were carefully dried with sterilized gauze.

The Immediate After-treatment of Cataract Operations (with bandage).

Dr. William H. Wilder, Chicago, referred to the importance of preparation of patient as if for a general anesthetic. The bowels thoroughly emptied prior to operation, and a light diet given for two days after, which lessened the danger of toxic substances being absorbed from the intestines and thus affecting the healing of the wound. He referred to the various complications: mania, vomiting and indigestion, cough, leakage of the wound, prolapsus of the iris, hemorrhage, iridocyclitis and infection. He concludes that much of the success in the management of a cataract case depends on skilful after-treatment, and of this too great importance can not be placed on general conditions. Too much zeal and local application might sometimes lead one into error. The dressing used after the operation should be of such a kind that it will keep the eyes closed. He could not see the rationale of the treatment of leaving the eyes open after such an extensive injury of the cornea. Both eyes should be closed for a time after the operation.

The Immediate After-treatment of Cataract Operations (without bandage)

Dr. J. W. Scales, Pine Bluff, Ark., read this paper, in which he condemns the practice of bandaging an eye after cataract operation for five essential reasons: 1. It causes a retension of secretions. 2. It increases the involuntary mobility of the eye by creating a feeling of discomfort and restlessness. 3. It interferes with uniform pressure on the wound and the ball of the eye. 4. It acts as a mechanical irritant. 5. It produces an entropion of the lower lid. The wire screen is advocated as used by Dr. Sattler of Leipzig, Germany. The conjunctival flap is recommended.

Operations for Secondary Cataract.

Dr. Peter A. Callan, New York, said that in choosing a method of operating the main point is to secure an adequate opening with a minimum of traumatism to the eye. All operations where tearing is an essential feature should be avoided. A study of the obstructing membrane in each case is essential to determine the choice of the proper method. A dense, tough or resistant membrane requires entirely different procedure from that necessary for a thin, diaphanous membrane. The chief danger in operating on secondary cataracts is not from infection, which is rare under proper aseptic treatment; it is due to the traumatism inflicted on the ciliary processes by traction by the use of a knife-needle or knife in cases where only the forceps scissors should be used.

DISCUSSION.

Dr. Myles Standish, Boston, expressed his entire agreement with the opinions of Dr. Jack and supplemented what he had said in regard to the mental preparation of the patient. It was necessary to bear in mind that the patient has probably waited for months or years with the knowledge of an inevitable operation. Nothing should be said or done in his presence to excite his imagination or suspicion. All the details should be finished before the patient is brought in, and no conversation in regard to the operation should be permitted.

Dr. Casey Wood, Chicago, in discussing Dr. Weeks' paper, said that personal equation must enter largely into the procedure of cataract extraction. It seemed logical, however, that some operative principles should underlie a safe and effective incision, and these, he thought, were comprised in Dr. Weeks' title, "desirable features." He could not, however, endorse entirely the essayist's satisfaction with adrenalin or any of the suprarenalin extracts as a hemostatic unless the circumcorneal incision is restricted to the limbus. He advocated the so-called "shoulder incision," which he used with great satisfaction. With this incision, iris prolapse is avoided. The argument for preliminary iridectomy, he thought, might be more strongly put than Dr. Weeks stated it.

Dr. Frank Allport, Chicago, discussing Dr. Fox's paper, believed that the combined operation was the best, at least for the average surgeon, and that the best operation of all was where preliminary iridectomy was done. He thought the vast majority of men would vote for preliminary iridectomy if the operation were to be done upon members of their family: it added considerably to the safety of the operation. The simple extraction, he thought, should not occupy such an exalted position in the minds of surgeons as it seemed to. He always removed the speculum after the iridectomy and laceration of the capsule. He almost invariably washed out the anterior chamber with normal salt solution.

Dr. G. E. de Schweinitz, Philadelphia, discussing Dr. Wilder's paper, emphasized the importance of the preparation of the patient as described by Dr. Wilder. Of the various cauterants he preferred carbolic acid. He thought the recurrent hemorrhages referred to were due to leakage of vessels already diseased, and that the best remedy perhaps was one of the various calcium salts, possibly the lactate.

Dr. Charles S. Bull, New York, discussing Dr. Callan's paper, said that secondary operation should never be performed until the eye has entirely recovered from the effects of the first operation, which would vary considerably in time. He agreed with Dr. Callan that the danger of infection from without is the least important if aseptic precautions are taken; the great danger to be avoided is traumatism, which may light up a new inflammatory attack. He agreed with the speaker as to the danger of hasty operations before the eye has recovered from the primary operation. The instrument should be determined by the nature of the membrane: if dense bands stretching across an otherwise thin membrane he used the forceps scissors.

Dr. Carl Hess, Würzburg, Germany, had abandoned the simple extraction because of the numerous cases of prolapse of the iris. He advocated the button holing of the iris, which gave the advantage of the round pupil without the danger referred to.

Dr. Ayres, Cincinnati, if he finds the wound closed at the end of 24 hours, takes the bandage off and leaves it off. He sees no reason why a perfectly closed wound should be bandaged.

Dr. Frank Todd, Minneapolis, advocated the use of the bandage spoken of by Dr. Wilder.

Dr. Allemann, Brooklyn, advocated the use of the open treatment in cataract extractions.

Dr. Herman Knapp, New York, emphasized the importance of teaching the beginner to be ambidextrous. He used the simple method in some selected cases.

Does the Opacity of Incipient Cataract Ever Regain Transparency?

Dr. Leartus Connor, Detroit, presented this paper, in which the inquiry is limited to partial or complete transformation of lens opacity, with or without striæ, into clear lens. Abstracts of six cases are given in which lens striæ were observed to give way, in part or whole, to clear lens. To avoid error, case records were originally made by both descriptions and diagrams of the lens opacities as observed at successive visits. Comparison of these findings made evident the clearing of the lens striæ. To these cases is added the observations of fifty ophthalmologists, showing that in about 143 cases "the opacity of incipient cataract regains transparency in part or whole."

Dr. G. Oram Ring, Philadelphia, expressed absolute confidence in Dr. Connor's findings and believed the paper would furnish an important stimulus to the ophthalmologists in their endeavor to arrive at definite conclusions as to which cases give promise of absorbing and as to the best methods. He thought that the betterment of vision was often brought about not by absorption of opaque striæ, but by the removal of chorioidal disease, secondary vitreous haze, associated with the clearing of the lens opalescence.

Dr. Chase, Colorado, reported a case in which the striæ cleared up, but later returned.

Dr. Herman Knapp, New York, said it was not very rare for a cataract to absorb.

Dr. F. B. Tiffany, Kansas City, reported a case of a young woman who had opacities of the lens of one eye following an attack of grippe in which the opacity cleared up.

Dr. Nance, Chicago, referred to a case in which opacity of the lens completely cleared.

Dr. W. H. Snyder, Toledo, reported two cases, in one of which vision cleared up after four weeks' treatment.

Dr. John E. Weeks, New York, for the last twenty years had made sketches of every case of striation of the lens that had occurred in his practice. The cases most favorable for clearing were those due to injury or disturbance of nutrition. He thought something could be done toward stimulating the nutrition of the anterior segment of the globe by local treatment.

Dr. Edward Jackson, Denver, thought the observation should go a little further and that there should be recorded not only that the opacity takes the form of striæ, but the conditions under which the striæ are observed. In applying the shadow test, striæ were often seen which were due to irregularities of refraction; these were sometimes so definite that at a distance of two feet it was impossible to say whether they were opacities or irregularities in the refraction.

Dr. Lamb, Washington, thought the cases that clear up were mostly those of angio-neurosis or angio-sclerosis.

Prof. Carl Hess, Würzburg, said you could study the etiology of these striæ experimentally by feeding rabbits with methylene; the striæ would appear after 24 hours, to disappear again when the feeding was stopped.

The Loss of Vitreous Humor in Extraction of Cataract.

Dr. J. M. Ray, Louisville, Ky., referred to the diversity of opinion that exists among operators as to the exact consequences of the accident in cataract extraction. The introduction of asepsis had lessened the primary danger of loss, yet the latter dangers are still present. He considered the stage of the operation at which the loss takes place of material importance. Removal in the capsule furnished the larger percentage of cases where vitreous escapes. His personal experience in 200 extractions showed that the escape of vitreous adds to the danger of primary loss and later still greater danger of changes that destroy the usefulness of the organ.

Dr. L. Webster Fox, Philadelphia, said the surgeon of to-day looked on the loss of vitreous with great seriousness and tried to prevent it at all hazards. In a few cases after loss of vitreous he had filled the eyeball with tepid saline solution with good results.

Dr. H. D. Bruns, New Orleans, thought that, since the use of cocain, there was less loss of vitreous, but more cases of umbilical cornea.

Dr. F. B. Tiffany, Kansas City, had had some experience with the cases after they had been treated by advertising men who claim to absorb cataracts, and in these cases had found a much greater tendency to escape of vitreous.

Dr. Samuel Theobald, Baltimore, referred to three factors as a cause of the accident: fluidity of the vitreous, behavior of the patient, and the particular kind of speculum employed. He advocated the use of the Murdoch speculum.

Dr. Hiram Woods, Baltimore, said the cases in which he had seen definite harm occur a short time after the accident had been those in which the vitreous lost was clear, glassy, rather than the fluid vitreous.

Dr. A. R. Baker found the loss of vitreous frequently due to the speculum and now usually made his extractions without a speculum, simply grasping the tendon of the superior rectus, the forceps holding the lid up.

Dr. E. Moraweck, Louisville, had discarded the spring speculum and used instead a lid elevator of thin wire.

Dr. C. A. Oliver, Philadelphia, confirmed what Dr. Theobald said about the value of the Murdoch speculum, but generally he did not use a speculum.

Dr. Green, Dayton, had come to regard the loss of vitreous as less significant of danger to the eye than entanglement of the iris.

Dr. Francis Valk, New York, always left the speculum in until he had completed the operation. Some of his best cases had been after a slight loss of vitreous.

Dr. Wm. Zentmayer, Philadelphia, thought the loss of vitreous in any considerable amount a serious complication. It was an error to look upon the accident as anything but a serious misfortune.

Yeast Cells as a Probable Cause of Ulcerative Keratitis.

Dr. George Keiper, Lafayette, Ind., referred to the previous mention of yeast cells in 1900 by Stoewar and Lundsgaard and reported a case in which yeast cells were found in an ulcer of the cornea. Description of the findings by Prof. Severance Burrage and inoculation experiments were given.

Ligation of the Common Carotid Artery for Malignant Recurrent Hemorrhage of the Vitreous.

Dr. George S. Derby, Boston, reported a case in which recurrent hemorrhages apparently originated from congenital membranous structures in the vitreous, first affecting the left eye, and leading to blindness in spite of treatment, with involvement of the right eye some months later. There were repeated and uncontrollable hemorrhages. Ligation of the right common carotid artery was followed by rapid recovery of vision.

Dr. Wm. H. Wilder, Chicago, thought one must consider very carefully the dangers of ligation of the common carotid. It was a very heroic remedy for a very serious condition. He referred to the use of tuberculin in the treatment of two similar cases.

Dr. John E. Weeks, New York, thought the case reported probably belonged in the category of what is ordinarily known as retinitis proliferans, and that the treatment by ligation of the common carotid could hardly change the character of the walls of the new-formed blood vessels in these cases.

Dr. Harry Friedenwald, Baltimore, had observed in several cases that there was evident disease throughout the course of the trouble of the finer veins preceding the appearance of active tissue formation.

Dr. S. D. Risley, Philadelphia, called attention to the fact that in ligation of the common carotid for aneurism of the cavernous sinus 24 hours later the entire fundus had been covered with patches of hemorrhage.

Neuro-Fibroma of the Orbit; Kronlein Operation.

Dr. W. R. Parker, Ann Arbor, Mich., said that neuro-fibroma of the orbit were extremely rare. He reviewed the reports of the two published cases, one by Tersch from the sheath of the lacrimal; one by Marchetti from the sheath of the infra-orbital nerve, and reported a third case having its origin in the sheath of the frontal nerve. The patient was operated on by the author in his clinic at the University of Michigan. The Krönlein operation was referred to and a comparison of the three cases made, in which there were some peculiar similarities. In all three the pathological findings were the same, although in one there was elephantiasis of the lid.

Dr. Edward Jackson, Denver, found that the term neuro-fibroma had been used so loosely that its significance was uncertain. The so-called plexiform neuromas more frequently found in the region of the eye appeared to be of the false neuroma type. He had never done Krönlein's operation except on the cadaver. He recognized that there was a distinct field for it, but the number of cases that could be properly submitted to it was comparatively small.

Dr. Herman Knapp, New York, referred to a case of plexiform neuroma operated on three or four years ago that had returned.

Dr. Harry Friedenwald, Baltimore, reported a case of plexiform neuroma in which the immediate result of operation was very good, but there was return of the growth.

Dr. Parker, in closing, said it was absolutely necessary both as to treatment and to prognosis to eliminate the so-called plexiform type.

Metastatic Conjunctivitis in Gonorrhea.

Dr. James J. Carroll, Baltimore, said the oldest belief was that all gonorrheal affections of the eye were metastatic, not, however, in the modern acceptation of the term. In the early half of the nineteenth century the doctrine became generally accepted that all conjunctival inflammations in the adult due to gonorrhea were the result of direct inoculation. In the latter half of the same century it became known that, while most of such inflammations are due to direct infection, a few are due to indirect infection. Many reported cases support this belief. The writer's two cases are given as additional evidence. Three theories are offered as to the pathogenesis of metastatic conjunctivitis: 1, that it depends on the gonococcus in the conjunctival sac; 2, that it is a mixed infection; 3, that it is due to the gonococcus toxin.

Dr. Robert Randolph, Baltimore, had never seen a case of metastatic gonorrheal conjunctivitis. He had met with several cases where he thought this condition was present, but it only proved to be the forerunner by a few hours of iritis.

Dr. Hiram Woods, Baltimore, reported a case in which there had apparently been a latent gonococcic infection for several years.

Dr. Herman Knapp, New York, saw this condition every now and then, the metastases showing itself particularly in the anterior chamber and clearing up without danger to the eye.

Dr. Wm. C. Posey, Philadelphia, thought that metastatic gonorrheal conjunctivitis had not received the recognition that its frequent occurrence deserved.

Dr. Ledbetter, Birmingham, reported a case occurring in a young married woman who had applied to a surgeon for treatment for some urethral trouble.

Dr. John Green, Jr., St. Louis, also reported a case occurring in a female, associated with dacryoadenitis.

Some Considerations in the Treatment of Lacrimal Obstruction.

Dr. Mark D. Stevenson, Akron, Ohio, divided the canal into three parts for treatment. The upper portion includes the puncta and canaliculi; the lower portion is that of the nose into which the nasal duct drains; the middle portion comprises the nasal duct and lacrimal sac. He deferred radical treatment of middle portion until certain that conservative treatment of upper and lower portions would not relieve obstruction. The methods used in treating diseased conditions above the nasal duct were referred to, the value of syringing and the use of the canaliculus clamp; etiologic importance of nasal conditions, especially about the outlet of the duct, were emphasized. The opinions of many ophthalmologists regarding removal of the lacrimal sac and gland were detailed. Reasons for removal of the sac were given, new specula to prevent hemorrhage referred to and method of removal of sac and gland with results of the operation were given.

Dr. G. E. de Schweinitz, Philadelphia, emphasized the fact that while epiphera is a symptom of dacryostenosis, epiphora does not necessarily mean that dacryostenosis is present, and it alone should never be the occasion for the use of probes until the most searching examination has eliminated various possible causes related to refractive error, imbalance of the ocular muscles, organic and functional nervous disease, paretic conditions of Horner's muscle, etc. In a certain number of cases the obstruction was associated with atrophic changes in the nasal mucous membrane. He was satisfied not only from observation, but from experience that the most satisfactory treatment of long continued suppuration of the sac was its excision, which was a simple operation easily performed.

Dr. C. R. Holmes, Cincinnati, referred to the advisability of removing the lacrimal gland when it was necessary to remove the sac. After removal of the sac there is still epiphora, which is annoying to the patient, and it is, therefore, an imperfect operation.

Dr. W. H. Wilder, Chicago, referred to a suggestion made by him some years ago of distending the sac with paraffin in order to make the procedure of its excision more simple.

Dr. A. E. Prince, Springfield, endorsed the remarks made by Dr. Holmes and thought the reason that the gland was not oftener excised was on account of timidity as to the operation. The results were very satisfactory.

Dr. Frank C. Todd, Minneapolis, warned the members against the use of argyrol in these cases. He had had two, one very mild and the other not so mild, in which the tissues of the orbicularis became permanently discolored.

Dr. J. L. Borsch, Philadelphia, distended the sac before operating with paraffin by means of a paraffin injector, filling the sac with solid paraffin.

A Method of Performing Tenotomy which Enables the Operator to Limit the Effect as Required.

Dr. Frank C. Todd, Minneapolis, said that a complete tenotomy of an extraocular muscle effects a change of 13 degrees and the attachment of the tendon may be so disturbed that muscle imbalance is often produced; therefore, complete tenotomy is undesirable. Partial tenotomy of Stevens' was ineffective, because fibers on each side of tendon are uncut, the tendon remains and becomes reattached in same position. To overcome objections to these operations and to enable the operator to produce any effect from one-half degree upward for either latent or manifest strabismus he described a method which can be practiced alone or in conjunction with advancement and does not bring about a wrong insertion of the muscle, the tendon simply being lengthened. Illustrative cases were reported.

Dr. A. D. Davis, New York, did not believe in operating in the conditions for which this operation was purposed most frequently, latent strabismus, and had but little faith in graduated tenotomies for the correction of manifest squint. To those members who perform operations for muscle insufficiency he thought Dr. Todd's operation the ideal method.

Dr. H. V. Würdemann, Milwaukee, had had satisfactory experience with the operation, but questioned whether the operation would give permanent results.

Dr. Broughton took exception to Dr. Todd's statement that you get no effect from graduated tenotomy at the insertion of the tendon and did not think Dr. Todd's operation could possibly be as good.

Dr. Francis Valk, New York, did not see why Dr. Todd, who had given such an excellent operation as the one done with his tendon tucker, should devise another for the same purpose. He thought better results could be obtained by the former operation.

Dr. L. Ziegler, Philadelphia, said Dr. Todd's operation was somewhat similar, though not quite the same, as the one he had purposed at the Pan-American Medical Congress some years ago, in which the incisions were made in the tendon, but on each side, leaving a central point.

Dr. A. E. Bulson, Fort Wayne, had had some experience with Dr. Todd's operation, with most gratifying results up to the present time. He questioned the permanency of these results.

Dr. G. C. Savage, Nashville, was in favor of any operation that would put a stop to complete tenotomies, which, he thought, should never be done.

Treatment of Strabismus in Young Children.

Dr. A. R. Baker, Cleveland, Ohio, thought the profession had been slow to put into practice Donder's teaching that the rational cure for strabismus is the early correction of the error of refraction. Probably, because of the difficulty of correcting refractive errors in young children. With the present methods of examination, the author thinks that it is possible to fit spectacles accurately and successfully to very young children, and thereby cure almost all cases of uncomplicated squint without resorting to operation.

Dr. Linn Emerson, in opening this discussion, said that Donders' discovery of the causal relation of hyperopia and hyperopic astigmatism to convergent squint is as true to-day as when first announced. It had remained for Worth to discover why some cases of hyperopia squinted while others did not—diffusion sense. His procedure was as follows: 1. Refraction objectively; 2, blurring of the fixing eye with atropin; 3, covering the fixing eye with a pad; 4, training of sight and later of fusion.

D. Wendell Reber, Philadelphia, said that in a series presented some years ago he had shown a cure of 76 per cent. of children under 7 years of age by means of glasses. He did not think these cases should be tenotomized.

Dr. A. E. Davis, New York, was opposed to fitting young children with glasses. He would just as soon think of giving them a set of artificial teeth. He thought that in patients under 2 years of age retinoscopy could not be done satisfactorily.

Dr. Lucien Howe, Buffalo, thought that there was not so much need of better methods of treating these cases as there was for more clearness in their diagnosis.

Dr. Oscar Wilkinson, Washington, said that the longer he practiced the more he was convinced that the earlier glasses were put on the better the effect obtained would be.

Congenital Squint.

Dr. William Campbell Posey, Philadelphia, referred to the liability of confusing squint from congenital causes with concomitant strabismus and the value of secondary deviations and contractions in making a differential diagnosis. Among the causes of congenital squint, aplasia of the nuclei was the most frequent, while malformations in the development of the orbit, secondary to asymmetry of the skull, is a frequent cause of a faulty insertion of the muscles into the globe, and even absence of the muscles themselves. The paper included a report of 70 cases occurring in the writer's practice, with photographs of a number illustrating various types of congenital palsies, with the results of operative treatment. The importance of early recognition between congenital and concomitant squint was emphasized, the treatment of congenital squint being always operative, while that of concomitant squint, if inaugurated early, should be orthopic.

Dr. Alexander Duane, New York, though Dr. Posey had well stated the fact that these cases of congenital deviation are not well characterized as paralysis; that the deviation is due very frequently to structural or insertional deficiences in the affected muscle rather than a paralysis of it, and the deviation is often, in part at least, spastic. Defects in the muscles themselves he believed to be the most frequent cause of congenital squint. He thought many cases required no treatment, as their symptoms did not warrant interference; in those that do require treatment operation is practically the only resource.

Ocular Rotations in Paresis.

Dr. Francis Valk, New York, read this paper, in which he concluded that all tests for paresis must be made with the look in complete infinity and with full acuity of vision. We must have a standard of the field of version for comparison of any deficiency of rotation. The straight muscles are capable of moving the eyes in any part of the field of vision and from one part of a field to another; in other words, in no part of the field will the straight muscles fail to act according to their usual function. The obliques take no part or action in the rotation of the eyes in the field of vision; in other words, the oblique muscles do not elevate or depress the visual line. A distinct line must be drawn between paresis and heterophoria as shown by the diplopia; in the first by diplopia in infinity, and in the second by the possible diplopia with reduced vision. In the consideration and diagnosis of paresis we may exclude the condition of crossed or homonymous images and also the tipping, except in a pathologic condition of the obliques. The individual muscles of the eyes are not endowed with two distinct functions, as they have but one nerve supply, except possibly in the action of convergence and inward rotation due to two distinct nerve centers. The points of action of the straight muscles of the eyes are the insertions and the sheaths of the tendons as they are situated in the orbit just behind the globe.

(The discussions of this paper by Drs. George H. Price, Alexander Duane and G. C. Savage were entirely diagrammatic, with drawings, and could not be abstracted.)

Ocular Neurasthenia.

Dr. Hiram Woods, Baltimore, said fatigue symptoms, unrelieved by refraction, correction, and often associated with the so-called hysterical accommodation, may be due to special susceptibility of the eyes to outside irritation, whose nature may be physical or psychical. These cases may be classified as ocular neurasthenias. They occur usually among industrious people. Thorough search for cause reveals an underlying condition capable of producing objective ocular lesion. Among these causes are unsuspected syphilis, intestinal disorders, hemic and nutritive troubles, pelvic anomalies, often functional, and psychic influences. There are certain ocular troubles which usually cause little or no annoyance, but which may direct a neurasthenic tendency eyeward. Relief of these somewhat lessens susceptibility, but only discovery of the underlying cause, with its medical or surgical treatment, cures. The aid of workers in other medical fields is often essential to correct diagnosis.

Dr. S. D. Risley, Philadelphia, thought Dr. Woods had done good work in calling our attention to the importance of careful study of the conditions of general health. There was the deep conviction that we must, first of all, be wise physicians and then oculists, in which conviction Dr. Risley concurred. Adverse circumstances which the average individual might be able to surmount became very terrifying to these patients with delicately poised nervous systems. While it was quite true that eye-strain may lie at the foundation of a complex group of symptoms which constitute ill health, it was equally true that asthenopia may be but one phase of the symptom-complex resulting from an impaired metabolism or some specific infection sapping the general vitality.

Dr. H. B. Bruns, New Orleans, referred to two cases illustrating the influence of obscure general conditions upon the ocular conditions.

Dr. A. L. Derriger, Chicago, reported a similar case.

Dr. Lucien Howe, Buffalo, regretted that oculists were often too much refractionists rather than physicians. He thought they should, first of all, be physicians.

Dr. Gradle, Chicago, said there were many individuals who go about with high degrees of refractive error and never complain; others who are greatly annoyed by very small degrees of error when the nervous condition is below par.

Prof. Carl Hess, Würzburg, Germany, expressed his full agreement with what Dr. Risley and Dr. Howe had said as to the importance of being physicians as well as oculists.

Dr. G. E. de Schweinitz, Philadelphia, said there is no question that there are a large number of people, so-called neurasthenics, in which the neurasthenia and eye symptoms were a part of the general systemic condition. With the removal of the underlying pathologic causes one might get good results with these patients.

A Protest Against the Employment of Paraffin Injections Near the Eyes.

Dr. A. E. Davis, New York, reported two cases in which the nature of the accident in the first case was similar in character to that already reported in a number of instances; that is, escape of paraffin into the tissues of the upper lid as a result of a paraffin injection at the root of the nose. The accident in the other case, however, was unique. Citations were given to show the irritating properties of paraffin. The danger of embolism from injections of paraffin was also noted. Other dangers were sloughing of the tissues, abscess, discoloration of the skin and great discomfort at times.

Dr. E. S. Thompson, New York, thought the warning in connection with the use of paraffin very much needed at the present time. He had not known of any case of embolism occurring from the use of paraffin in the sclera or capsule of Tenon. The technique was of greatest importance and was described in detail. In the Mule's operation he thought the advantage of paraffin over the glass ball was very great: it was less irritating and more apt to be retained; there was no danger from breakage, and if the scleral lips separate the mass could be reduced in size by cutting away some of the paraffin.

Dr. Frank C. Todd, Minneapolis, referred to the number of such results that have been reported. Two years ago he had received a letter from a patient asking what could be done for relief when too much paraffin had been used and had extravasated into the cheeks. He thought in Dr. Davis' first case the result was due to too low a melting point.

Dr. Parker, New York, said that in over half the cases in which he had used paraffin in Tenon's capsule it had been extruded.

Dr. Harmon Smith, New York, said that the injections should be made away from the soft tissues of the orbit towards the tip of the nose, and to prevent regurgitation back into the soft tissues he had an assistant make pressure on the nasal bones. He believed the majority of failures were due to bad technique.

Dr. W. Marple, New York, said his experience with the paraffin balls was very similar to that of Dr. Parker's.

Further Observations on Retinitis Punctata.

Dr. H. Gradle, Chicago, read this paper. On reviewing his personal observations and the cases reported by others, the writer finds that the term "retinitis punctata" has been and can be applied to different types of disease which have in common the occurrence of white dots in the fundus, but vary in significance and clinical history. First, the dots may be the only lesion with few symptoms and little or almost no reduction of sight. The cases usually end in recovery. Second, the retinal dots can appear and persist for a while during recovery from optic neuritis. Third, the retinal dots may be a part of a diffuse retinal disease. Fourth, in some rare instances, punctate retinitis is probably an atypical albuminuric retinitis of renal origin. Fifth, exceptionally the chorioid is involved in the disease. Sixth, most of the reported cases are really atypical retinitis pigmentosa, sometimes with and sometimes without the characteristic peripheral pigmentation.

Dr. M. Weiner, St. Louis, said that with the punctate retinitis described by Dr. Gradle as a retinal infiltration which disappears and then reappears to fade away again leaving no scar he had had little experience. He had seen a punctate infiltration of the retina which he termed a senile form where the swelling would subside and leave little sharply outlined dots as though they had been punched out with a conductor's punch. He agreed with Dr. Gradle that the retinal dots might be associated with some other trouble, as optic neuritis or diffuse retinitis. He believed, in a great many cases the retina was only secondarily infected, the trouble being primarily in the chorioid.

Myopia Associated with Opacities of the Cornea.

Dr. W. L. Pyle, Philadelphia, said (1) central corneal opacities are a much more frequent cause of myopia than would be inferred from an examination of the literature; (2) the myopia is axial and not dependent on alteration of the corneal curve; (3) the mechanism of the production of the myopia is analogous to that of the common form, with the added predisposing factor of weakened ocular tunics by previous inflammation; (4) disturbance of the chorioid and retina of the posterior segment of the eyeball, with inflammations of the anterior membranes, an element in further reducing visual acuity; (5) either unilateral or bilateral opacities may produce myopia—the myopia may be unilateral or bilateral; (6) in unilateral opacity the myopia may be single or double. (7) in cases of bilateral corneal opacities the myopia is generally bilateral; (8) the cases of unilateral myopia are strongly suggestive of the importance of ciliary strain rather than excessive convergence in myopogenesis.

Indications for the Employment of Adrenalin Chlorid, in Connection with Cocain, in Operations on the Eye.

Dr. Samuel Theobald, Baltimore, presented this paper, in which he said that, in addition to its astringent and hemostatic action, adrenalin chlorid used in conjunction with cocain renders the anesthesia more complete. As a rule, adrenalin should not be employed in operations involving the making of a corneal section. Iridectomy called for during an attack of inflammatory glaucoma constitutes an exception to this rule. Its use is contraindicated in operations for pterygium. In injuries of the eye complicated by the superficial lodgment of foreign bodies, the hemostatic action of adrenalin is helpful. The repeated use of a 1-1000 solution of adrenalin has not been found to produce untoward results. The sterilization of adrenalin solutions by brief boiling does not impair their efficiency.

Dr. S. L. Ziegler, Philadelphia, said the conjunctival ischemia caused by adrenalin prevents the absorption of cocain and thus causes the anesthetic to act more efficiently in the superficial tissues. It might be instilled freely in tear-duct cases and minor operations, and was excellent in iridectomy for glaucoma.

Dr. C. A. Veasey, Philadelphia, agreed with Dr. Theobald that the employment of adrenalin in conjunction with cocain enhances the value of the latter, but warned against too free use of the drug in the eyes of patients affected with arteriosclerosis.

Dr. John E. Weeks, New York, had been using adrenalin in cataract extractions for a number of years and had not seen any bad results from its use. He never employed it in pterygium because it reduced the volume too much. Its continued use as a therapeutic measure was deleterious.

Dr. George H. Price, Nashville, said if the remedy is used to prevent hemorrhage it should precede the use of cocain. It also limited the action of cocain as to space, preventing too free absorption, carrying the anesthetic to adjacent tissues.

The Value of Tuberculin TR. as a Diagnostic and Therapeutic Agent in the Recognition and Treatment of Tuberculosis of the Eye with Report of Cases.

Dr. Charles S. Bull, New York, said in this paper that to determine positively the tuberculous nature of ocular lesions we must apply three tests: 1, histologic; 2, experimental; 3, bacteriologic. Cellular aggregations, giant cell systems and caseous degeneration found together make diagnosis of tuberculosis practically certain, but the presence of either alone was not sufficient proof. Treatment should begin with minimum dose of 2 mg., in view of possible profound general reaction, and maximum dose should be .5 cg. It was important to continue the injections for several months.

Dr. Snyder said the results had been rather satisfactory in the hospitals in which he had been working with the ordinary and usual injections of tuberculin.

Dr. L. Ziegler, Philadelphia, thought the opsonic index was now the most important question to be considered. The most important thing in ocular work was to be able to make the diagnosis. It was important to differentiate tubercular keratitis from the syphilitic variety. He had confined his work to the use of the old tuberculin of Koch. The TR. had to be imported and was a rather dangerous product, as it was made from the active germs.

Dr. Wm. H. Wilder, Chicago, said that the followers of Wright and those who were studying the subject of tuberculosis from the standpoint of the opsonic index believed it was dangerous to inject tuberculin without knowing first the opsonic index. He thought we could not absolutely rely upon this, however, as it might indicate a tubercular focus in any part of the body.

Dr. John E. Weeks, New York, questioned whether or not the disturbance in temperature occasioned by the injection of tuberculin enabled one to make a positive diagnosis of ocular tuberculosis. There must be a local reaction in the eye.

Dr. A. E. Bulson, Fort Wayne, said there might be a coincident rise of temperature after the injection of tuberculin and that, therefore, a rise of temperature should not be considered as conclusive evidence of tuberculosis. There should be ocular manifestations as well.

Prof. Carl Hess, Würzburg, said they had used tuberculin for diagnostic purposes and found that in more than 50 per cent. of the cases of iritis there was a general reaction.

Dr. Clarence A. Veasey, Philadelphia, exhibited an instrument for testing the light reflex of the pupil.

Premiums Paid to Experience.

Dr. F. T. Rogers and Dr. G. W. Van Benschoten, Providence, R. I., read this paper, which consisted of a critical study of 5,000 consecutive cases seen in private practice, with a tabulation of the different ocular diseases which have been under observation, and analysis of some of the results obtained by treatment, and a résumé of the knowledge and experience gained in certain lines of ophthalmic practice. Importance of refraction and remarks on methods of examination and some of the common sources of error; value of cycloplegics, personal results in treating functional diseases by correction of refractive errors; non-surgical treatment of convergent squint; therapeutics of conjunctivitis, trachoma, keratitis and scleritis. Efficacy of medical treatment of retinal diseases, possibility of dental irritation causing retinitis. The successful treatment of a case of embolism of the central artery is reported. A plea for more attention to the common types of disease.

Dr. L. H. Taylor, Wilkesbarre, agreed thoroughly with the essayist that refraction work was of the utmost importance, but did not agree with the idea sometimes expressed that the majority of oculists are doing poor work. He examined under atropia and did not give full correction, as he found that full correction generally rendered the patients uncomfortable.

Dr. E. E. Holt, Portland, referred especially to the necessity for keeping accurate records of cases and thought that by the assistance of a standard form of keeping records patients could be treated much more intelligently. His proportion of refraction cases to the whole number of cases was about the same as that given by Dr. Rogers.

Dr. Allan Greenwood, Boston, took exception to the recording of a cure of embolus in the case referred to; he thought that was hardly justifiable.

Dr. Robert L. Randolph, Baltimore, advocated the use of the homatropin discs in refraction work.

Dr. Oscar Wilkinson, Washington, did not think there was ever justification for doing refraction on young subjects, under 40, without some mydriatic. He used homatropin, in exceptional cases atropin.

Dr. A. E. Bulson, Fort Wayne, had found that the results obtained with homatropin were not accurate; when the patients were afterwards examined with atropin considerable increase of the error would be found.

Dr. A. R. Baker, Cleveland, had not refracted a case under 40 for many years without using a cycloplegic. As a routine thing he used homatropin first.

Dr. Alleman, Brooklyn, thought that no drug would completely relax the accommodation, and that if atropin were used first and homatropin later there would also be found an increase of error at the second examination.

Dr. J. L. Borsch, Philadelphia, referred particularly to the dietetic treatment and thought it was easy to understand how so delicate an organ as the eye might frequently be affected by the irritation caused by toxins in intestinal disturbance.

The Preventive Treatment of Transferred Ophthalmitis (so-called Sympathetic Ophthalmia).

Dr. Charles A. Oliver, Philadelphia, presented this paper, which was intended to show that, in spite of a vast yearly increase of ophthalmic cases in Wills Hospital and a broader and earlier recognition of the condition, there has been a decided lessening in the number of cases and a much less degree of fatality among those which are now treated than in former years. This improvement was worthy of special record when it is considered how long the institution has existed, that it is situated in the midst of a large industrial and commercial center, and that it is near an immense mining territory and agricultural district. The paper presents 14 indirect and direct causes for these results and cites in detail some of the most important preventive measures that have lessened the chances for the occurrence of the disease.

Dr. C. R. Holmes, Cincinnati, said there was still a wide difference of opinion as to whether the infection travels by way of the intraocular blood vessels or along the nerves. Experiments on animals had failed to clear up the mystery of this disease. He thought the reason why the per cent. of sympathetic ophthalmia had so greatly increased was due principally to the fact that the theory of infection is now recognized by all physicians and pretty thoroughly understood among the laity, and that a large number of the general practitioners had learned to keep their hands and infected instruments and applications away from the freshly injured eye, but promptly to cover it with a clean protective bandage and hurry the patient to an oculist.

Dr. Zentmayer, Philadelphia, said that sometimes in the removal of magnetic foreign bodies the amount of trauma resulting was so great that better judgment was to perform immediate enucleation, but that the fact of success in extracting the foreign body made the patient less willing to accept counsel and the oculist more indulgent to his pleading, as a result of which one sees patients with sightless irritable eyes, a constant menace to the fellow eye.

Dr. J. A. Donovan, Butte, Mont., thought most eyes were lost by meddlesome ophthalmology. He believes sympathetic ophthalmia should and will become an obsolete disease if proper methods are pursued.

Dr. J. L. Borsch, Philadelphia, referred to the injection of large quantities of bichlorid of mercury, 1-2000, which had succeeded with one case under his care.

Dr. A. E. Bulson, Fort Wayne, thought that very often oculists erred by enucleating too early in the endeavor to prevent possible sympathetic irritation, removing an eye which otherwise might be saved.

Dr. R. L. Randolph, Baltimore, thought the thing which had helped him most in dealing with these cases was noting the tension of the eye. He believed that a blind eye in which the tension is decidedly low was an eye which in the long run would be found to give rise to sympathetic irritation.

The Relations of the Circumlental Space to the Causation of Glaucoma, as Shown by the Wurdemann Lamp.

Dr. John A. Tenny, Boston, reviewed the early and modern theories concerning the causes of glaucoma and its production by the use of mydriatics. He referred to the observation of the circumlental zone by means of the Würdemann lamp in normal and glaucomatous eyes. He had noticed many cases in which the anterior chamber was very shallow and the circumlental space also, yet there was no increase of tension. It would seem that chronic glaucoma must be caused by excessive pressure in the vitreous chamber, due to diseased blood vessels in the uveal tract, with at the same time probable alteration in the constitution of the aqueous humor which blocks up the outlets.

The Surgical Treatment of Chronic Glaucoma.

Dr. S. D. Risley, Philadelphia, read this paper, embracing the following studies: 1. a uniform understanding of what constitutes simple glaucoma, chronic glaucoma, non-inflammatory glaucoma, is important. 2. Is glaucoma simplex to be classified in the same general category with the inflammatory types of glaucoma? 3. If answered affirmatively, much hesitancy as to the wisdom of operative interference in non-inflammatory glaucoma disappears. In a history of illustrative cases this question was discussed. The danger from delayed diagnosis in treatment was considered, together with the importance of prompt interference. Ocular tension was relative and palpation a fallible means of determination. Exacerbations of increased tension of the globe may pass without recognition. The technique of iridectomy was fully considered. The writer believed that for a successful issue the iridectomy should be peripheral, i. e., to the root of the iris, and that it should include one-sixth of the circumference.

Dr. H. V. Würdemann, Milwaukee, said there were two forms of glaucoma, anterior and posterior; that glaucoma is not a disease *per se*, but condition, the most pronounced symptom of which is excessive intraocular pressure. In the anterior types the diagnosis was assisted by transillumination. The diaphanoscope was best applied to the sclera at the outer canthus after the application of 2 per cent. alypin or 5 per cent. cocain. In posterior glaucoma, diaphanoscopy was negative. Diaphanoscopy in glaucoma did not show anything new, but was a valuable corroborative method of examination.

Dr. John E. Weeks, New York, said the essential feature of all glaucomas is a disturbance of the normal relation between the inflow and outflow of the fluids of the eye whereby the outflow is not sufficiently rapid to prevent a relative increase in the tension of the affected eye over the normal for that eye. He referred to the causes of glaucoma in general, partial or complete blocking of the avenues for the escape of fluid from the interior of the eye, an excessive flow of fluid into the eye, or both. No one doubted the efficacy of operative treatment in acute glaucoma, and if we admit that chronic glaucoma and acute glaucoma are due to similar causes and that they differ in great part only in severity we might expect that the same operative procedure that afforded relief in the one would also afford relief in the other, provided the procedure was applied at the proper time.

Dr. H. D. Bruns, New Orleans, had come to rely very much on the shape of vision in these cases. He referred to the difficulties of the problem in the negro race, and thought it vain to talk of early operation in these cases, as they were never seen until the disease was far advanced.

Dr. Wiener, St. Louis, called attention to a method of operating by which a small piece of iris was incarcerated in the wound to promote drainage.

Prof. Carl Hess, Würzburg, had frequently seen cases where the iridectomy was made without fault and vision lost after a short time, and it seemed often that it was lost still more quickly than in the eye in which no operation was done.

Dr. S. L. Ziegler, Philadelphia, would object to the operation allowing an incarcerated iris, because of the danger of sympathetic trouble. If it was desired to have the wound leak, it was preferable to turn a piece of the conjunctiva into the wound, but it was better to make a posterior sclerotomy.

Dr. McReynolds, Dallas, Texas, raised the question as to whether a patient completely blind in one eye with glaucoma and with much diminished vision in the other eye should be operated upon and whether there was much danger of producing sudden loss of vision. He advocated a narrow iridectomy in these cases.

Dr. Hiram Woods, Baltimore, reported a case of gradually contracting field of vision with tension after use of mydriatic in a patient 77 years of age, in which after an iridectomy acute attacks of glaucoma developed.

The Comparative Potency of Hyoscin and Scopolamin Hydrobromid in Refraction Work.

Dr. Wendell Reber, Philadelphia, read this paper. The two drugs were at first considered entirely different. Ten to fifteen years ago it was concluded by many that they were identical, and the author so reported himself ten years ago in some pharmacologic notes. Later his use of the two drugs led him to suspect a pharmacodynamic difference. Careful pharmacodynamic comparative studies on four adults with approximately mathematically perfect eyes seemed to show that hyoscin is the more potent, notwithstanding that Merck & Co. give identical chemical formulas and identical reactions with the polariscope for the two drugs.

Dr. A. E. Bulson, Fort Wayne, agreed with Dr. Reber that hyoscin is more effective than scopolamin as a cycloplegic. He had adopted it because it was more efficacious than homatropin and more evanescent than atropin.

Dr. S. D. Risley, Philadelphia, referred to the poisonous effects of hyoscin and many years ago had been compelled to abandon it on that account.

Dr. C. A. Oliver, Philadelphia, prefers scopolamin for his private work and atropin for public cases. He agreed with Dr. Risley as to the toxicity of hyoscin.

Dr. Allan Greenwood, Boston, referred to a case in which alarming symptoms were produced by the use of a ½ gr. to the ounce solution of hyoscin hydrobromid.

Dr. S. L. Ziegler, Philadelphia, had seen poisonous effects with the use of hyoscin, but thought that in the strength used by Dr. Reber it was possible to have cycloplegia without toxemia.

The Parabolic Reflector for Illuminating Test Charts.

Dr. Mortimer Frank, Chicago. The principle involved in the construction of this reflector from a paraboloid of revolution, viz., a beam of parallel rays falling on a paraboloid or light emanating from the focus of the paraboloid, is reflected by the paraboloid as a beam of parallel rays. The nearest approach to parallelism occurs with the incandescent light, in which case the illuminated surface is very small. Calculations to determine size of parabola and photometric curve of parabolic reflector and proper position of source of light to give a uniform distribution of light. The reflector was described in detail.

The Treatment of Ulcers of the Cornea.

Dr. H. Bert Ellis, Los Angeles, Cal., considered it necessary to have some classification of corneal ulcers to give a basis for treatment. No hard and fast line could be laid down for the treatment of corneal ulcers *per se*. Certain symptoms were common to all kinds of ulcer, of which pain and photophobia should receive first consideration, and the treatment for these differed in the acute mild types, the sthenic cases and the subacute and torpid types. The difference in action of atropin and eserin were considered and the aid which dionin lends to either of these drugs. Paracentesis should be performed to relieve pain and prevent further destruction of the eye. Bandages and compresses should be used for protection and pressure. Treatment consisted in the removal of the cause, relief of a co-existent aggravating disease, prevention of further destruction of corneal tissue, promotion of repair and prevention of sequelæ.

Dr. E. A. Shumway, Philadelphia, thought more attention should be given to the etiology of the condition and that we were better able to anticipate the severity of the process if we determine the micro-organisms present and the treatment could be more intelligently directed. If the pneumococcus is found it is known at once that the treatment must be energetic, that cauterization should be applied early, and paracentesis promptly resorted to if the process advances; the presence of the diplobacillus assures that the condition will be readily controlled. He also emphasized the importance of searching for disease of the lachrymal passages. He considered dionin one of the most valuable drugs in the treatment of corneal ulcers.

Prof. Carl Hess, Würzburg, Germany, reported good results with the use of the pneumococcus serum in cases due to the pneumococcus alone.

Dr. L. H. Taylor, Wilkesbarre, Pa., emphasized the value of the cautery, and thought it should be employed early without waiting to find out what the organism of infection might be.

Dr. J. A. Tenney, Boston, preferred the strong solution of carbolic acid as a cauterant.

Dr. J. A. Donovan, Butte, Mont., considered nitric acid the best agent, and in the hands of the expert thought the electrocautery should always be employed.

Dr. A. R. Baker, Cleveland, called attention to a ready method of applying the cautery—an alcohol lamp and a strabismus hook—the hook heated in the flame for ten to twenty seconds and applied directly to the ulcer.

Dr. G. C. Savage, Nashville, emphasized the value of dionin in the treatment of corneal ulcers; it relieved tension and gave great comfort to the patient. Locally, he believed the best treatment was with lactic acid.

Dr. Leartus Connor, Detroit, had had patients get the greatest good from the local use of hot water and had been able to give more comfort with that agent than with anything else. He considered it the next best remedy to atropin.

Dr. S. L. Ledbetter, Birmingham, also advocated the use of the hot water applications.

Treatment of Purulent Ophthalmia.

Dr. George H. Price, Nashville, Tenn., presented this paper, which discussed purulent ophthalmia due to gonococcic infections only. Prophylaxis in ophthalmia neonatorum, purulent conjunctivitis in the adult and young boys and girls were considered. He advises against the use of cold applications, except as a tentative measure to combat symptoms, and then for primary effect only. He refers to the importance of beginning active treatment of suspected cases, prior to the pus stage, by silver salts. The adjuvant remedies to be used are considered and the line of treatment best calculated to abort the condition, preventing chemosis and marked swelling of the lids, and, above all, serious corneal complications.

Dr. John E. Weeks, New York, cautioned against the severe reaction produced by the instillation of the strong silver solutions, silver nitrate, and thought a solution of only 1 per cent. should be employed. In children the condition of the mucous membrane of the urethra should always be inquired into. He thought that sometimes cases were aborted by the use of 2 per cent. silver nitrate, but in the majority of cases the abortive treatment would not be successful.

Dr. Herron, Jackson, always employed argyrol in 10 to 20 per cent. solution, and believed that with this treatment the cases were cut very short.

Dr. Byington, Battle Creek, only used cold applications in the very initial stage and alternated with hot applications for the restoration of circulation.

Dr. Hiram Woods, Baltimore, had found the silver nitrate solution a better prophylactic than the newer silver salts. He thought that cold applications were only beneficial as adding to the comfort of the patient.

Dr. A. E. Prince, Springfield, said the silver nitrate in weak solutions had not been satisfactory to him: it seemed as though the disease ran its course as a self-limited disease. He reported good result with the use of a 10 per cent. solution applied and at once neutralized with salt solution.

Dr. E. C. Ellett, Memphis, advocated the argyrol submersion treatment as brought forward by Dr. H. Bruns, of New Orleans. He employed a 50 per cent. solution.

Dr. Woods, Marshalltown, Iowa, thought that only the weak solutions of silver nitrate should be used because of the lowered vitality of the parts.

Dr. L. H. Taylor, Wilkesbarre, believed in the use of the strong solutions as advised by Dr. Prince, provided the surgeon himself made the application.

Dr. M. D. Stevenson, Akron, used a 1:3000 bichlorid ointment on the lids to prevent their sticking together and to facilitate the flow of the secretions.

Dr. Edward Jackson, Denver, thought it possible in the adult to sometimes use the cold applications with the result of keeping down the temperature of the cornea sufficient to inhibit the growth of the gonococci, in those same cases in which the lids were not much swollen. He thought the nitrate of silver could not be safely omitted, but should not be used more than once in twenty-four hours, and should be thoroughly applied in such strength as necessary, 2 to 10 per cent.

Dr. Leartus Connor advocated the use of argyrol. He believed that heat promoted the active changes for repair and increased the power of resistance.

Dr. C. H. Williams, Boston, thought more stress should be laid upon frequent thorough cleansing of the eye, which meant irrigation.

Dr. Oscar Wilkinson, Washington, thought that usually argyrol was not used in sufficiently strong solution. He considered that cold applications had no place except in the incipiency of the disease.

Treatment of Iritis.

Dr. E. C. Ellett, Memphis, Tenn., considered the medical treatment of plastic iritis along the usual lines. The objects of treatment were to dilate the pupil and to relieve pain. Rest, heat, cocain and dionin should be used as adjuvants to the mydriatic employed. The constitutional treatment should be based on the treatment of the cause, the attention to the patient's bodily health and the administration of certain remedies, especially mercury and the salicylates known to affect the local condition favorably, regardless of the cause and of the patient's general condition.

Dr. Allan Greenwood, Boston, endorsed the use of the solid atropin, with the proviso that it be used by the attending ophthalmic surgeon only. He used a piece about the size of a small pin head, placing it in the lower cul-de-sac. He had seen adhesions give way under the employment of the solid atropin that had shown no signs of yielding under ordinary treatment. A previous use of dionin greatly helped the atropin. Recurrences should be prevented by treatment of the general condition, whether it be one of syphilis, rheumatism or autointoxication.

Dr. H. W. Ring, New Haven, added his testimony to the effectiveness of the use of the solid atropin.

Dr. Byington, Battle Creek, thought that some of these cases of iritis that resisted every other treatment yielded to the use of the subconjunctival salt solution.

Dr. A. E. Davis, New York, reported a case of poisoning from the use of the powdered atropin.

Dr. J. H. Shorter, Macon, Ga., thought the bad results seen in the negro race were due to the fact that through their ignorance they never came for treatment until the cases had advanced to the formation of adhesions.

Dr. C. H. Williams, Boston, referred to the value of paracentesis, which, he thought, deserved more general use in these cases.

Dr. W. R. Parker, Detroit, emphasized the point in reference to paracentesis; he employed repeated tappings of the anterior chamber.

Dr. Lamb, Washington, corroborated the testimony of previous speakers as to the severe adhesions and posterior synechia found in the cases occurring among the negroes.

Dr. Edward Jackson, Denver, thought that in the consideration of this subject constitutional treatment should be placed first; that it was of much greater importance than the local treatment.

Dr. Leartus Connor, Detroit, had used the powdered atropin twelve years ago and had yet to observe the first case of poisoning.

Dr. Hiram Woods, Baltimore, agreed with Dr. Jackson as to the importance of constitutional treatment in these cases and advocated especially the use of salicylate of sodium in 25 to 30 gr. doses.

Dr. G. C. Savage, Nashville, thought the *sine qua non* of the treatment was dilatation of the pupil; it was of more importance than constitutional treatment, though he would not wish to minimize systemic treatment at all.

Treatment of Interstitial Keratitis.

Dr. H. H. Martin, Savannah, Ga., read this paper. From answers to questions addressed to thirty ophthalmologists, representing as many sections of the country, the essayist made the following deductions, which coincide with his own opinions: No known local treatment of interstitial keratitis materially shortens the inflammatory stage. Iodids internally are not indicated during the inflammatory stage. Inunction is the best method for the administration of mercury. The treatment resolves itself into the treatment of congenital syphilis. The only known specific for syphilis, congenital or acquired, is mercury. Failures are due to the empirical application of routine methods. Local measures applicable in other inflammations of the cornea and uvea are indicated in this disease.

Dr. Hiram Woods, Baltimore, considered that the treatment of this disease presented five separate factors: 1. Alleviation of symptoms. 2. Prevention of extension to deeper tissues. 3. Promotion of absorption. 4. Constitutional treatment of underlying causes. 5. Prevention of relapse. At present it could not be denied that the mercurial treatment afforded the best results; doubtless 80 per cent. were due to syphilis. But there were the other cases in which there was no history of syphilitic taint and which mercury would not relieve.

Dr. W. H. Roberts, Passadena, Cal., considered congenital syphilis by far the most common cause. It was generally admitted that the mercurials were of less value in treating hereditary syphilis than in the acquired form. He used iodids in the beginning, frequently combining mercury with them. He expressed some doubt as to whether constitutional treatment has any material effect on the disease.

Dr. Herbert Harlan, Baltimore, called attention to a previously reported case of his in which an intercurrent attack of measles in a child, 10 years old, had produced immediate cure of the interstitial keratitis.

Dr. A. A. Hubbell, Buffalo, always used atropia locally because of the associated iritis. He found the application of moist heat one of the most beneficial of agents in this condition.

Dr. Bernstein, Kalamazoo, Mich., used the subconjunctival injections of salt solution for all diseases of the anterior segment of the eye, including interstitial keratitis.

Dr. Lamb, Washington, obtained excellent results, he thought, with dionin. He also used the subconjunctival injections of salt solution.

Treatment of Chronic Trachoma.

Dr. A. E. Prince, Springfield, Ill., read this paper, in which he considered the various germicides used for combating the germ of trachoma—copper sulphate, mercuric oxid, tannic acid, silver nitrate, boric acid, jequirity. Of these, none had been so extensively used as copper sulphate and silver nitrate. He thought that copper sulphate deserved special attention. The results obtained by the Department of Agriculture from weak solutions, as low as 1:1,000,000. It was shown that the solution of 1:25,000 destroyed every germ in less than two hours. He presented the result of a year's experience with exceedingly weak solutions applied at frequent intervals. On the whole, it was the writer's opinion that it is the best home medical treatment that had come to his notice and it is recommended that it be given a trial, with the belief that the frequent instillation into the eye of a fresh solution, made up from a stable solution in glycerin, is more efficient than the occasional application of the blue stone crystal. The complications, ulceration of the cornea and pannus, were also considered and the author's experience with jequirity and jequiritol given, together with the various surgical procedures for the correction of entropion, etc.

Dr. J. C. Hancock, Brooklyn, used a method of grattage and scarified in all his cases. Any case that was apparent enough for diagnosis was operated upon. He did not allow in his clinic or office the use of cupric sulphate, as he believed the results were as bad as the disease.

Dr. Herbert Harlan, Baltimore, said the most satisfactory treatment he had used was grattage followed by an ichthyol ointment.

Dr. Oscar Wilkinson, Washington, advocated the use of radium, which he had found of exceptional value in the treatment of this disease. He had always found the sulphate of copper of benefit in the chronic cases.

Dr. John E. Weeks, New York, considered all cases of trachoma that we see chronic—a chronic conjunctivitis. He did not believe that copper sulphate in the strength advised by the writer was a germicide against any known organism. It might act as a stimulant, but not as a germicide.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of May 13, 1907.

DR. F. C. HOTZ, President, in the Chair.

RETINITIS PROBABLY DUE TO CEREBELLAR TUMOR.

Dr. H. B. Young, Burlington, Iowa, made a further report on a case of retinitis, probably due to cerebellar tumor, treated by tuberculin.

UNILATERAL VERNAL CONJUNCTIVITIS.

Dr. Casey A. Wood read a paper on vernal catarrh, exhibiting a case of unilateral vernal conjunctivitis and microscopic specimens of tissue removed. The patient was a healthy girl of 11, with a marked ptosis of the left side. Almost the entire conjunctival surface is seen, on eversion of the lid, to be occupied by irregular, roughly polygonal, partly pedunculated, flat-topped masses of hardened tissue, distinctly separated by sulci which extend to the altered conjunctiva beneath, being in some instances 2 mm. deep. There were no nodes on the bulbar conjunctiva, although the upper sixth of the cornea was invaded by a number of new vessels which simulate, to some extent, the vascular pannus of trachoma. The right eye shows nothing to indicate the ravages of a past or present spring catarrh. Two months ago the cartilage-like masses were abscised under general anesthesia and their bases curetted. The pathologist's report showed a chronic hyperplasia of the epithelium and underlying connective tissue: the stroma is full of bundles, wavy elastic fibers permeating the entire connective tissue structure. A great many eosinophiles were present. Improvement followed the employment of the *x*-rays and tropical applications.

VERNAL CATARRH.

Dr. F. A. Phillips presented a case of palpebral vernal catarrh upon which a complete tarsectomy had been done by Dr. Beard upon one eye and a partial one upon the other after all the usual methods of treatment had been employed. The operation had been attended by improvement. Dr. Phillips did not feel that the case was cured, but the patient had been comfortable for the past year.

Dr. E. V. L. Brown sectioned the tissue removed and found a typical proliferation of elastic tissue in large bundles forming the main bulk of the tarsal granules.

HERNIA CEREBRI.

Dr. Mortimer Frank exhibited a boy, 13 years old, who had a congenital hernia cerebri. There was absence of the brow and of the cilia down to the medium fissure, and the upper wall of the orbit was away back. The fundus was normal, except for enlarged veins, both superior and inferior. Vision was 6/lx, probably due to an astigmatic cornea.

CONSERVATION OF SYMPATHETIC NERVES IN ENUCLEATION.

Dr. George F. Suker read a paper on sympathetic nerves in relation to enucleations and presented a case. When an eye is to be enucleated the best possible cosmetic effect should be secured. Usually the connection of the nerve fibers passing to the lids is severed and destroyed, and there ensues a traumatic, sympathetic process, which is unsightly. In the past four or five years he has been very careful not to sever or interfere with the lenticular ganglion so as to preserve the continuation of the nerve fibers of the lids. Since he has been doing that he has avoided subsequent drooping of the lids, as was shown by the patient exhibited. In most of the enucleations done prior to that time the lids drooped, and in the case of those that escaped he took it for granted that the nerve fibers were not interfered with during the operation.

DISSOCIATED NYSTAGMUS.

Dr. Willis O. Nance exhibited a case in a 17 months old child. The tremulous movements of the left eye were rapid, while those of the right were scarcely noticeable; in fact, when the eyes were turned to the extreme right no movement in this eye was perceptible. The movement of the eyes also differed as to direction, in that those of the left were at times horizontal, and at other times the eye moved in an oblique axis; the movements of the right were rotary. There was no muscular anomaly present, the ocular media were clear and there was no history of brain disease. The patient had a rather high degree of hypermetropic astigmatism with an oblique axis. The mother stated that the left eye began to "twitch" when the patient was 1½ months old and has continued since, while the right eye was perfectly quiet until six weeks ago, when she first noticed a tremulous movement.

Nance prescribed atropin four weeks ago, when he first saw the case, and since that time there has been some diminution in the movements of the eyes. This leads him to believe that a correction of the refractive error may materially assist in the cure.

TYPICAL LIMBUS DERMOID.

Dr. Nance also exhibited a young man of 20 who had a typical limbus dermoid situated at the temporal aspect of the right eye. A number of coarse black hairs could be seen on the growth. The eye on which the growth was present was highly myopic and there was a marked degree of astigmatism present; the other eye was slightly hypermetropic. There were a number of opacities demonstrable in the lens; no other changes were discovered. The patient refused to have the growth removed.

ENTROPION WITH CORNEAL ULCER CONSECUTIVE TO A ZOSTER OPHTHALMOS.

Dr. F. A. Phillips exhibited a patient demonstrating this condition. The patient first appeared January 25, when he complained of an inflammation of the eye, which, on inspection, proved to be a corneal ulcer with shallow edges. There was a cicatricial entropion and anesthesia of the cornea. A year before he had been violently ill with the zoster ophthalmos, and then there appeared the corneal ulcer, probably the result of the anesthesia of the cornea, and then the entropion. On the third day of his illness he became delirious and remained so for the greater part of five months. He then began to improve, and by the seventh month the zoster had healed. The eye remained sore the entire time, so that it is a question whether the cornea was involved at the time of the zoster. The ulcer had healed, and the cornea is being protected from the falling of foreign bodies on it, which served to prolong the ulceration. The patient was presented previous to operative procedure, so that the improvements which it was hoped to get could be noted.

E. V. L. Brown, *Secretary.*

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

Dr. Frank Allport and Mrs. Allport, of Chicago, sailed for Europe June 11.

Dr. George Weill, of Strassburg, has been made Professor of Ophthalmology.

Professor Volckers has received the Prussian Order of the Red Eagle, second class.

Dr. J. A. de Abren Fialho has been made Professor of Ophthalmology in Rio Janeiro.

Dr. J. A. Patterson, of Colorado Springs, Colo., has recently returned from a tour of France and Spain.

Dr. Geo. T. Arney, an ophthalmologist of Altoona, Pa., died recently in Philadelphia after a protracted illness.

Dr. Adolph Gad died, aged 60 years. He was director of the eye clinic in the Policlinic Hospital at Copenhagen.

Dr. Victor Williams, of Winnipeg, Canada, has gone to Europe for postgraduate work on the eye, ear, nose and throat.

The Bath Eye Hospital, Bath, England, has received a large bequest with which extensive improvements are to be made.

Prof. Dr. H. Magnus, Professor of Ophthalmology in Breslau, Germany, died in that city on the 22d of April, aged 65 years.

Dr. Adolph Schenkel, of Prag, Bohemia, has received the title of Professor of Ophthalmology at the German University in Prag.

Geh. Rat. Prof. Dr. Wagenmann, of Jena, has declined the call to succeed Laqueur at Strassburg. It had already been declined by Carl Hess.

Dr. Charles Laight, who was for many years connected with the New York Eye and Ear Infirmary, recently died in Rome, Italy, aged 60.

Among those who sailed for Europe following the Atlantic City meeting were Dr. Geo. de Schweinitz, of Philadelphia, and Dr. Clark, of Columbus, Ohio.

Dr. H. Coulter Todd, of Oklahoma City, was recently elected President of the Central Oklahoma Medical Association at its meeting held in Guthrie April 10.

In the reorganization of the Medical Department of Tulane University of Louisiana, at New Orleans, Dr. Henry D. Bruns becomes Professor of Ophthalmology.

Leslie Paton was recently appointed assistant ophthalmic surgeon to the National Hospital for the Paralyzed and Epileptic, Queen's Square, London, W. C., England.

Dr. John O. McReynolds, of Dallas, Texas, conferred the degrees at the commencement exercises of the Southwestern University Medical College of Dallas April 27.

Dr. and Mrs. Henry Dickson Bruns recently entertained the members of the Louisiana State Medical Society and their wives at their home on Prytania street, New Orleans.

Professor de Lapersonne, of Paris, was appointed to the Chair of Ophthalmology at the Hotel Dieu, with Joseph, adjunct Professor; Landolt, chief of clinic, with Monthus as adjunct.

The first meeting of the Ophthalmological Society of the United Kingdom to be held outside of London was held on May 25 at Edinburgh in the Eye Department of the Royal Infirmary.

At the reorganization of the Faculty of Medicine of the University of Tennessee, Dr. F. E. Nesbit was elected to the department of eye, ear, nose and throat. The medical department has recently been moved from Jackson to Memphis.

Prof. Johan Widmark, Scandinavian representative of the Ophthalmoscope, has been obliged to resign on account of overwork. His position has been assumed by Dr. Forsmark, Stockholm, one of the lecturers in ophthalmology at the Carolina Institute of Stockholm.

Mr. Robert W. Doyne, Reader in Ophthalmology at Oxford University, England, will give a course in his subject from July 15 to 29 next. On the last two days of the course a congress of ophthalmic surgeons will be held, presided over by Mr. Edward Nettleship. A very interesting scientific and social program has been arranged.

A Library for the Blind in New York City was established by Richard R. Ferry of that city in 1895 in a small basement room in St. Agnes Chapel. It has now become a part of the St. Agnes Branch of the New York Public Library at 444 Amsterdam avenue. The library also employs an instructor to go about the city to teach the blind to read in any point system they desire.

Dr. Wm. H. Wilder, of Chicago, was elected Chairman of the Section on Ophthalmology at the recent meeting of the American Medical Association, held at Atlantic City. The other officers are: Vice-Chairman, Dr. Wm. Campbell Posey, of Philadelphia; Secretary, Dr. A. E. Bulson, Jr., Fort Wayne, Ind.; Representative to House of Delegates, Dr. Wilbur Marple, New York. Chicago was chosen as the meeting place for 1908.

The annual report of the New Orleans Eye, Ear, Nose and Throat Hospital shows that during last year 6,464 patients were treated, 3,113 of whom were eye patients, 3,283 were ear, nose and throat cases, 56 were dermatologic and 12 dental. The staff for the coming year is as follows: Dr. Arthur W. de Roaldes, surgeon-in-chief; Dr. Henry D. Bruns, eye surgeon; Dr. Gordon King in charge of the ear, nose and throat department.

(Cable to the *Chicago Tribune.*)

London, May 22.—"Please send me another dozen eyelashes."

This is a sample of numerous orders being received by an ingenious inventor who has created a demand among women beauty seekers for false lashes to replace Nature's eye fringes with which the owners are dissatisfied. The patentee claims that hundreds of women are eagerly buying eyelashes, especially those who spend much time in automobiling. They visit him to be fitted in the first instance, but after their preliminary fixture the lashes keep in good shape for a month. They may then need a little attention, such as curling with warm tongs and receiving a touch of a special fluid.

A Chicago hairdresser states that these false lashes have been in use for about a year and cost $20.00 a set. They are fastened to the lid edges with glue.

Miss Fellows and Miss Starkweather, of Milwaukee, were in Chicago recently interesting physicians and philanthropists in their school for those having defective vision, hearing or speech.

The school is located at 403 Newberry boulevard, Milwaukee, and is doing a much needed work. There is a hospital in connection with the school which, in addition to caring for eye and ear cases, is also prepared to care for crippled children.

The work is entirely non-sectarian, and charity or pay patients are taken alike. The purpose is to get these cases in early childhood so that they may be more easily taught to become self-supporting and independent. The school is greatly in need of money, and its scope is handicapped on that account. Part of the plan consists in placing these children, sufficiently prepared, in the public schools with children who can see, printing the same lessons in point for the blind as are studied by the seeing. The founders invite investigation of their work and ask for the interest of the profession in securing contributions to help the work.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) J. F. Burkholder, (E.E.N.T.)	G. W. Mahoney (Poli.) *Geo. F. Suker (P.-G.)	J. Elliot Colburn (E. E. N. T.)	G. W. Mahoney (Poli.) Richard S. Pattillo (P.-G.) J. F. Burkholder (E. E. N. T.)	Richard S. Pattillo (P.-G.)	G. W. Mahoney (Poli.)
10 A.M.	Oliver Tydings (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	E. J. Brown (E. E. N. T.)	Oliver Tydings (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)	J. R. Hoffmann (E. E. N. T.)
11 A.M.	....	A. G. Wippern (E. E. N. T.)	....	A. G. Wippern (E. E. N. T.)	....	A. G. Wippern (E. E. N. T.)
1 P.M.	....	Willis O. Nance (C. C. S.)	....	Willis O. Nance (C. C. S.)	....	Willis O. Nance (C. C. S.)
2 P.M.	E. V. L. Brown (Inf.) E. J. Gardner (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) D. A. Payne (Ills. Med.) N. E. Remmen (Inf.) Emily Selby (Inf.) Cassius Wescott (Rush) *H. W. Woodruff (Inf.) N. A. Young (Inf.) C. G. Darling (N. W. U.) Chas. P. Small (N. W. U.) Alex. P. Horwitz (N. W. U.) Francis Lane (Rush) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Clarence Heath (N. W. U.) Geo. T. Jordan (N. W. U.) Richard Tivnen (N. W. U.) M. H. Lebensohn (P. & S.) S. L. McCreight (C. C. S.)	E. V. L. Brown (Inf.) W. A. Fisher (E. E. N. T.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) N. A. Young (Inf.) C. G. Darling (N. W. U.) Chas. P. Small (N. W. U.) Alex. P. Horwitz (N. W. U.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Oscar Dodd (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) Thos. Faith (E. E. N. T.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) E. J. Gardner (E. E. N. T.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Clarence Heath (N. W. U.) Geo. T. Jordan (N. W. U.) Richard Tivnen (N. W. U.) Francis Lane (Rush) M. H. Lebensohn (P. & S.) S. L. McCreight (C. C. S.)	E. V. L. Brown (Inf.) M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) Cassius Wescott (Rush.) H. W. Woodruff (Inf.) N. A. Young (Inf.) *C. G. Darling (N. W. U.) *Chas. P. Small (N. W. U.) *Alex P. Horwitz (N. W. U.) J. B. Loring (P. & S.) E. K. Findlay (P. & S.) *Casey Wood (N. W. U.) *Oscar Dodd (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) W. A. Fisher (E. E. N. T.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) D. A. Payne (Ills. Med.) F. A. Phillips (Inf.) *Wm. H. Wilder (Inf.) H. B. Williams (Inf.) Clarence Heath (N. W. U.) Geo. T. Jordan (N. W. U.) Richard Tivnen (N. W. U.) M. H. Lebensohn (P. & S.) S. L. McCreight (C. C. S.)
3 P.M.	W. Allen Barr (C. C. S.) *Wm. E. Gamble (P. & S.)	H. H. Brown (Ills. Med.)	*J. E. Harper (P. & S.) W. Allen Barr (C. C. S.) *Wm. E. Gamble (P. & S.)	Burton Hazeltine (County)	W. Allen Barr (C. C. S.)	Brown Pusey (County)
4 P.M.	W. F. Coleman (P.-G.)	C. W. Hawley (P.-G.)	G. F. Suker (P.-G.)	C. W. Hawley (P.-G.)	W. F. Coleman (P.-G.)	Geo. F. Suker (P.-G.)

*Special operative eye clinics.

ABBREVIATIONS,

C. C. S.: Chicago Clinical School, 819 W. Harrison Street.

E. E. N. T.: Chicago Eye, Ear, Nose and Throat College, Washington and Franklin Streets.

County: Cook County Hospital, W. Harrison and Honore Streets.

Ills. Med.: Illinois Medical College, 182 Washington Blvd.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

Poli.: Chicago Policlinic and Hospital, 174 E. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

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Original Articles.

THE POSITION OF THE OPHTHALMOLOGIST IN THE TREATMENT OF DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.*

WILLIAM CAMPBELL POSEY, M.D.

PHILADELPHIA.

(With Colored Illustration.)

In December of last year the writer was consulted by a lady, 61 years of age, upon account of the prominence and some dimness of vision of her left eye. She had been refracted by him for compound hypermetropic astigmatism for two years previously, and at that time the aspect of the eyes was normal and nothing pathological was noted. As shown by the photograph, which was taken by Dr. Swindells at the second consultation, the left eye was considerably proptosed, being pushed forwards and somewhat downwards. The protrusion was constant and was not affected by pressure, and no pulsation was conveyed to the examining finger. There was no bruit. Both the upper and lower lids were somewhat edematous, and the entire left temporal-frontal region was likewise boggy and swollen, the skin over this region being stretched and the veins prominent and distended; there were, however, no signs of acute inflammation. Upon palpation, a firm, smooth mass was detected directly under the orbital rim, with an indentation in the bone in this position.

With + S. 0.75 D. = + C. 0.25 D. ax. 100° vision was brought to 5/6 in the left eye, though full visual acuity had been attained at the first examination with + S. 0.50 D. = C. 1. D. ax. 100°. The media were clear, but the nerve was pale and the retinal vessels were full, particularly the veins and more especially the superior temporal. Venous pulsation was pronounced. This was in marked contrast to the ophthalmoscopic findings in the right eye, where the veins were free from pulsation and both arteries and veins were of normal size. The nerve, too, presented its normal tint. There was no choking of the lymphatics of either eye. The field for form and color was normal in the right eye, but there was a loss of a sector of considerable size in the upper temporal field of the left.

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*Read at the meeting of the American Ophthalmological Society, at Washington, D. C., May 7, 1907.

The ocular symptoms were thought to be due to a distension of the left frontal cells, and she was sent accordingly to Dr. F. R. Packard for a rhinological examination. This, however, beyond a very marked swelling of the bullæ ethmoidalis, was negative. Transillumination also showed merely a faint antral shadow on the left side. In view of the possibility of specific infection, although there was no history pointing to such a condition, the patient was placed on ascending doses of potassium iodid and kept under close examination, as sarcoma of the orbit could not be excluded. After repeated nasal examinations necrosed bone was finally found in the anterior wall of the left sphenoidal sinus, a large part of which was removed. Following this, cauterization of all the sinuses was apparently successfully performed, the openings of all appearing patulous.

After a month of expectant treatment, radical operative measures seemed indicated, as the outer orbital ridge had now broken down and crepitation could be elicited under the skin; vision, too, had become more compromised, indicating that the optic nerve was suffering from pressure. With the aid and counsel, therefore, of Drs. William Zentmayer and Francis R. Packard a curvilinear incision was made over the left eyebrow, laying bare the tissues immediately below the supraorbital ridge. A mucocele at once presented, which was tapped, giving exit to a large quantity of a clear gelatinous fluid. The supraorbital ridge was found to be much disintegrated and the index finger could be introduced into the frontal cells without difficulty. These were enormously distended, it being possible to pass the finger directly across the root of the nose, the septum having been displaced by the distension of the cells. As a dense thickened membrane appeared to line the cells and necrosis was nowhere apparent, drainage into the nose seemed unnecessary, and after the cells were thoroughly emptied of their contents a drainage tube was inserted at the point of incision and the wound closed.

For the first twenty-four hours the patient did well, there being but little rise in temperature and no subjective sensations. At the end of this time, however, uremic symptoms developed, which were thought to have been engendered by the ether, as the urine, which had been normal before the operation, now contained albumin and blood. The patient was bled, sweated and transfused, and at the end of twelve hours came out of the coma, and for another twenty-four hours seemed to be doing well, when suddenly the uremic condition returned and, despite all measures, death ensued from uremia. No autopsy was performed, but the wound appeared healthy at all times and there was no evidence of infection or cerebral irritation from that source.

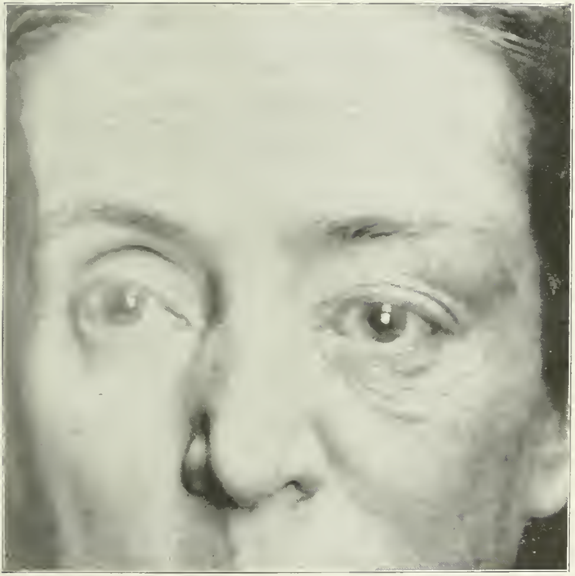
This history has been cited not because of the rarity of the case or of its clinical interest, but because it illustrates a phase in medicine of which, in the opinion of the writer, there is an increasing need of adjustment, namely, the relationship which ophthalmologists and rhinologists bear to one another in the treatment of disease of the accessory sinuses of the nose, and raises the question, upon which of the two does the duty of operating in cases of this nature devolve?

The patient herself chose an ophthalmologist, as the swelling for which she sought relief was manifestly connected with the orbit. He, believing the lesion to be dependent upon a nasal cause, referred her to a rhinologist for diagnosis and possible treatment, only to have the patient returned with a negative report. The ophthalmologist, then, with the probability of sinusitis excluded, made ready for the treatment of an orbital condition, and a Kronlein procedure was thought of, though this assumption was dispelled and the proof of his first diagnosis confirmed by the incision, which placed him in the predicament of an ophthalmologist treating an affection of a sinus.

And there are many similar cases, the most pronounced symptoms of which are ocular, though the underlying condition is nasal. To whom do such cases belong and within the province of what specialty do they fall?

Manifestly, the proper person to treat them is one who combines both ophthalmology and rhinology in his practice, but as the number of those who unite these two specialties is yearly becoming less on account of the impossibility of keeping informed in the knowledge of more than one as a consequence of increasing research and extent of literature, this association will doubtless not be maintained many years longer.

In earlier years all cases of sinusitis with orbital symptoms fell to the ophthalmologist. Rhinology had not been developed and practically nothing was known of the accessory cavities, but recently, with increased knowledge in diagnosis and treatment, rhinologists have absorbed the treatment of these cases, and among other procedures have not hesitated to include the orbit in their field of operation when they were unable to procure satisfactory drainage by intranasal methods. Incisions which lay bare the orbital contents, and dissections which often impair the safety of the eyeball and the optic nerve and seriously threaten vision, are practiced by them, and specialists in this branch who are informed but vaguely of the location of important ocular structures proceed without hesitation in their operations in this alien territory. It is true, however, that the ophthalmologist is himself wholly responsible for this encroachment, for as a rule he has been entirely negligent in his appreciation of the fact that there are such things as sinuses and that there are structures upon the other side of the walls of the orbit of which he should be better informed. For beyond the recognition of the fact that nearly all abscesses of the orbit are secondary to sinus infection, until very recently ophthalmologists were ignorant of many of the symptoms which sinusitis may evoke in their own specialty. The writer has had occasion to allude to the symptomatology of sinusitis at a former time (Fifty-sixth Annual Session of the A. M. A., July, 1905), and will not dwell further upon this phase of the subject, it being his intention at the present time rather to urge upon ophthalmologists the desirability of a more intimate knowledge of the anatomy and diseases of the sinuses and to insist that when the necessity for orbital incisions and dissections arise in the treatment of affections of these cavities that they be done by ophthalmologists or at least in their presence and with their counsel. He does not intend by this that the rhinologist should be supplanted in the general treatment of sinusitis, but he is strongly of the opinion that where there are orbital complications or where external incisions must be practiced in the neighborhood of the orbit the ophthalmologist should hold the knife, or at least superintend the work of the rhinologist. It goes without saying that the ophthalmologist, in his turn, should submit all cases in which he suspects sinus involvement to rhinological examination, and in the event that the condition is reported amenable to intranasal treatment that a transfer should be at once affected. Should, however, external opening of the sinus be demanded it is the duty of the ophthalmologist to proceed, though always when feasible with the assistance of a rhinologist. Until a sinus is opened it is impossible to determine the extent of cells involved, and in the event of extensive disease the skill and resources of both ophthalmologist and rhinologist will often be taxed to bring the case to a successful issue. The services of both are essential if the patient is to receive the most skilful manipulation and



Mucocele of the left frontal sinus.

consideration in diagnosis and treatment, and both should work hand in hand. In a case similar to that which has been cited the ophthalmologist could not have proceeded intelligently without rhinological aid, and with the possibility in view of encountering an orbital neoplasm the rhinologist would have been rash, indeed, and manifestly out of his sphere, who would have attempted the operation without the presence of an ophthalmologist.

In order that ophthalmologists should be intelligent operators and consultants in this field, however, it is essential that they should acquaint themselves more fully with what rhinologists have already accomplished, especially regarding their methods of opening sinuses by external incision and the indications which determine the necessity for this procedure.

The latter phase especially has been the subject of much discussion during recent years and there is still a lack of accord regarding it, especially since it has been proven that in addition to the disfigurement which is occasioned by the scarring of the external operations a number of fatal cases have been reported following this method of operative procedure. Those who are interested are referred to the notes of a symposium on diseases of the accessory sinuses at the American Laryngological, Rhinological and Otological Societies, held in Boston in 1905 (*Annals of Otology, Rhinology and Laryngology*, September, 1905), and also to the discussion on the diagnosis and treatment of chronic empyema of the frontal sinus before the British Medical Association in August, 1899. Papers by C. G. Coakley (*Annals of Otology, Rhinology and Laryngology*, September, 1905), and C. R. Holmes (*Ohio State Medical Journal*, February, 1906), are also of value. The consensus of opinion of most rhinologists, however, regarding the necessity for the external operation is comprised in the following summary, which is quoted from Parker:[1] (1) Failure of intranasal methods to establish free drainage into the nose, as shown by persistence of pain and other symptoms: (2) deterioration of the patient's general health from the continuous discharge: (3) bulging of the sinus or inflammatory edema over the sinus: (4) an external fistulous opening: (5) symptoms of cerebral complications.

In addition to these indications the writer has ventured to insert also a description of the various procedures which are practiced by rhinologists in the external opening of the sinuses, and he would suggest that it might be helpful to operators upon orbital structures if in the future ophthalmological authors should incorporate similar descriptions in their text-books. As recently summarized and described by F. C. Cobb, the external operations for frontal sinus empyema are as follows:

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[1] Parker: The Nose and Throat and Their Treatment, p. 288.

1. *Method of Nebinger-Praun.*—The incision goes from the nasofrontal suture at the edge of the orbit to a point over the supraorbital notch. The anterior bony wall is chiseled away, then a vertical cut 4 to 6 cm. long is made following the frontal vein. After opening, the contents of the sinus are wiped out and the mucous membrane scraped. The nasofrontal duct is secured by a wick at the base of the wound.

2. *Method of Ogston-Luc.*—In incision at the inner third of the edge of the orbit, which may be lengthened either outwards or toward the root of the nose. The periosteum is pushed upward and outward toward the orbit. The opening of the sinus is a little to the outer side of the median line. The nasofrontal duct is curetted, as well as the interior of the sinus and some of the anterior cells of the ethmoid. Through the wide communication with the nose thus made a drainage tube is put in and the outer wound closed. After eight days the bandages are removed. At first drainage tubes were used between sinus and nose, but these were later replaced by strips of iodoform gauze.

3. *Method of Kuhnt.*—In this method the whole of the anterior wall of the sinus is removed, with its diseased mucous membrane, as also the upper part of the nasofrontal canal. The incision is as follows: A horizontal incision along the supraorbital margin from the eyebrow to the outer third of the edge of the orbit; then a vertical incision from the inner edge of the wound through the soft parts of the periosteum. After lifting the soft parts and the periosteum the whole wall of the sinus is removed with chisel and bone forceps and the edges of the wound are smoothed. All projections into the cavity are thoroughly removed, the mucous membrane is most carefully scraped from the sinus and from the upper part of the duct. The wound is sewed up, leaving only room for a large drainage tube. This method has met with fair success, but causes considerable depression and does not remove the anterior ethmoid cells. When the disease is bilateral the cosmetic result is, of course, better.

4. *Jansen's Method.*—Removal of the lower wall of the sinus and resection of the lower border of the anterior wall, curetting the mucous membrane of the sinus and the granulation tissue. This method is not at present used by Jansen, but in 1903 he was doing a boneflap operation of very much the same character as that practiced by Hajek.

5. *Method of Ridell.*—Removal of the anterior and lower wall of

the sinus. Thorough and satisfactory except for the great deformity.

6. *Killian's Method.*—Incision as in Ogsten-Luc, with supplementary incision beginning at root of nose and passing under inner edge of orbit. Incision is not carried through the periosteum of the arch in the eyebrow, but the soft parts are lifted and incision through the periosteum made a little higher up so as to preserve that of the arch. Removal of the whole anterior wall of the sinus with curetting mucous membrane and all inequalities of the bone. Incision then made in the line below orbit as described. Ethmoid cells entered through nasal process of maxillary bone and thoroughly curetted. Upper wall of orbit removed, allowing orbital fat to fill up depression caused by removal of orbital wall. Closure of wound without drainage.

7. *Coakley's Method.*—Incision, as in Ogsten-Luc operation. Cavity thoroughly curetted with the assistance of electric lights placed in sinus. Nasal duct curetted but not widened, the object being to secure its closure; sinus then packed with gauze and repacked until it heals from the bottom.

The advantages and disadvantages of these methods may be summed up in a few words: The Ogsten-Luc has for advantage the slight deformity produced. For disadvantage it has the great probability of recurrence. The same is true of Jansen's method. Kuhnt's, Ridell's and Coakley's methods yield less probability of recurrence, as they destroy the sinus, but they produce greater or less facial deformity, Coakley's probably giving the least of the three. To all of these methods there is one great objection—that the ethmoid cells are not sufficiently considered. Killian's operation seems to combine the advantage of sinus obliteration with the removal of the ethmoid cells, but it is hard to judge as yet of its practical results as far as deformity and danger to the eye are concerned.

As the site of drainage of the antrum is quite distant from the orbit no reference need be made to that operation here, and the incision and drainage for ethmoidal disease is so familiar to all that mention of its details is unnecessary.

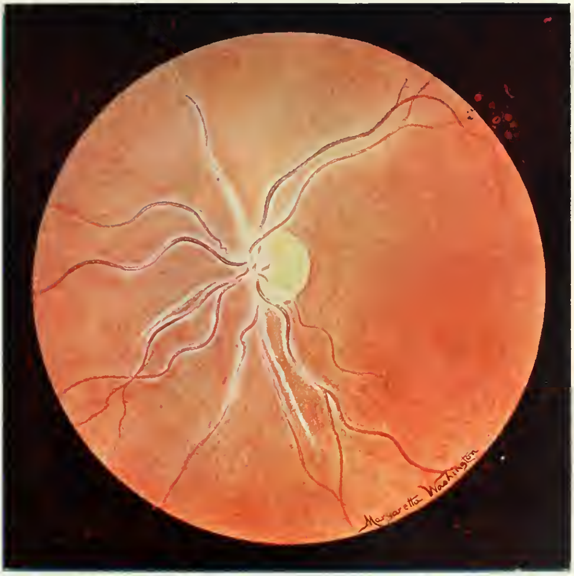
The *x*-rays have been found to be of decided value in determining the size of the sinuses and their relation to one another and should be used in conjunction with transillumination in the diagnosis of all obscure cases.

As dwelt upon in former papers, the writer would condemn the common practice of denying the existence of a sinusitis by the failure of a cursory examination to reveal pus in the nose, for discharge from the sinuses into the nose is the exception rather than the rule in inflammation of these cavities in which orbital complications tend to develop. It must be remembered, too, that a congestion of the sinus without exudation may originate ocular symptoms. The recent observation of Onodi's that the optic nerve and chiasm may become affected from disease in the accessory sinuses of the opposite side, either by extension of the inflammation through the congenital defects in the bone (in the wall of the optic canal or accessory sinus, or along the canals from the ethmoidal veins) or through some disturbances in the circulation, such as edema, hemorrhage, exudation into the optic nerve sheath, thrombosis, etc., should also be generally recognized.

A very interesting case, which well illustrates the choking of the lymph passages of the retinal vessels in both eyes, but more especially of those upon the side opposite to the nasal lesion, occurred in the writer's practice during the past winter. D. H., male, 35 years, was referred by Dr. Packard two years ago on account of an enophthalmus of the right eye, consecutive to a fracture of the floor of the orbit following a blow while sparring. The enophthalmus was quite pronounced, but beyond the retraction of the globe and some limitation in its excursions, the eye was normal.

About twelve months after the first consultation the patient came again on account of a marked swelling in the lid of the right eye, which had developed suddenly. The palpebral edema was intense and both lids were somewhat emphysematous. Though vision was normal in both eyes, the ophthalmoscope revealed a marked choking of the lymphatics of the retinal vessels in both eyes, this being especially pronounced in the left eye, where the distension of the lymphatics attained a maximum degree. The retinal arteries were also much diminished in size and the veins rounded and cord-like. The retina was diffusely hazed. This ophthalmoscopic finding was absent at the first examination and was thought to be dependent upon a stasis in the circulation in the optic nerves, as a consequence of congestion occasioned by an ethmoiditis, which Dr. Packard discovered upon the right side, and which was the probable cause of the swelling of the lids, the sinusitis having been favored by the stoppage of the ducts of the cells, as a consequence of the orbital fracture. Active treatment of the sinusitis caused a rapid diminution in the palpebral conditions, and the distension of the lymphatics of the retinal vessels became gradually less pronounced, though white streaks along the side of the vessels are still visible. (See colored illustration.)

The cases of sinus involvement, of which perhaps there is the greatest need of a clear understanding by ophthalmologists, are those of mucoceles of the cells. Every ophthalmic surgeon of ex-



Perivasculitis of the retinal vessels with choking of the lymphatics in the left eye of a subject with right sided ethmoiditis.

perience sees a number of such cases yearly, and as the first symptom which attracts the patient's attention is the displacement of the eyeball, he must be prepared to recognize the condition. Under ordinary circumstances the diagnosis is easy, the swelling occupying the inner portion of the orbit in the case of the ethmoid cells, and the upper and inner in involvement of the frontal cells. The projection at first is hard and bony, resembling an extosis, though later it acquires a tense parchment-like feeling, and when the bone gives way crepitation and fluctuation may be elicited. As a rule, there is no pain, the history being that of a slow but progressive increase of the swelling, extending over a period of years. It is on account of this slow growth that the eye gradually accustoms itself to the change which its displacement occasions in its relationship with its fellow, so that there is no diplopia, while the optic nerve, by means of its sigmoid flexure, straightens and does not suffer from the stretching to which it is subjected. The nasal examination is negative.

The differentiation of the condition is generally not difficult, for empyema of the sinuses very rarely occasions distension of the cavity, while tumors are rare, and in the event of their being malignant are more rapid in their course and are generally painful. There is, however, often difficulty in diagnosing mucoceles from syphilitic disease of the orbit, the writer having within the past two years assisted in two operations, which were undertaken for what were supposed to be mucoceles, which proved to be diffuse gummatous infiltration of the orbit. One of these cases occurred in the practice of Dr. William Zentmayer and the other in that of Dr. Frank C. Parker. Both were children, the gumma occurring in one instance in the upper, inner angle of the orbit, in the position where a distension of the floor of the frontal sinus was thought of, while in the other there were hard, bony swellings in the upper and inner portion of both orbits, suggesting a distension of both frontal cells. Thick glairy pus was found in the nose of one case, and other evidences of nasal disease in the other, and the rhinologists in both instances thought it likely that the sinuses were involved and favored operation. The orbital incision discovered densely infiltrated tissue in both cases, without involvement of any of the sinuses. Healing was prompt and later medication with mixed treatment greatly ameliorated the local condition.

The diagnosis is also difficult where a mucocele causes displacement of the eyeball directly forward, for as a rule the encroachment of the sinus occasioning the proptosis is in the apex of the orbit and palpation of the orbital tissues is negative. In most cases of this nature, however, the posterior ethmoidal cells are the ones implicated.

As a final point the writer desires to refer to the fatality of sinusitis and to report the details of a fatal case, where the submission to treatment when the sinusitis was first detected would doubtless have prevented the spread of the necrotic process and preserved life.

D. B., a Russian Jewess, age 20 years, came to the Wills Eye Hospital in February, 1903, on account of the prominence of her left eye, which had been getting more pronounced for some time. For three weeks previously she had suffered from violent headache and vomiting, which had been attributed by her physician to a gastric affection. There was no history of traumatism and inflammatory symptoms about the eye had been absent. Examination showed the left eye to be markedly protruding. The superior rectus muscle was paretic and the upper lid drooped, covering the upper quarter of the cornea. No tumor was felt in the orbit and the globe could not be reduced by pressure. The pupil was of equal size with its fellow and reacted well to light and accommodation stimuli. The ophthalmoscopic examination of the right eye was normal, but the left nerve was somewhat hyperemic and the retinal veins were full and tortuous. Vision and the visual field were normal in both eyes. Although the patient had never had any reason to suppose that she had anything wrong with her nose, a sinusitis was thought of, and she was sent to Dr. Walter J. Freeman at the Polyclinic Hospital for a nasal examination. A bulging of the outer wall of the nose was found in the region of the ethmoid cells, and as transillumination showed the antrum to be dark, Dr. Freeman thought that this cavity was also affected. An orbital operation was advised, but was not consented to.

The patient then passed from under the observation of the writer for three years. During this interval, however, she entered another hospital, where sarcoma of the orbit was diagnosed and the patient subjected to the action of the *x*-rays, in conjunction with the removal of a quantity of dead bone from the orbit.

In October, 1904, while she was still an inmate of this institution, Dr. Freeman saw the patient again and noted a thick mucopurulent discharge from the left fossa with marked tenderness of the orbit near the ethmoid cells. The exophthalmus had become somewhat more pronounced. An operation was determined upon and the ethmoid cells were accordingly opened, giving access to a very large cavity which extended back to the sphenoid, but from which no pus escaped. The swelling of the orbital tissues following the operation was very great, and Dr. Freeman believed that while that part of the dilated cell within the nose was emptying its contents freely into the nose, the orbit was still affected and that there was retention of pus there. Dr. W. W. Keen was called in consultation and agreed with Dr. Freeman that a sarcomatous condition was very doubtful, as he considered the case to be one of ethmoidal suppuration. The patient was still under treatment with the *x*-rays, which were applied two or four times weekly. Further operative measures were advised by Dr. Freeman, but were not deemed desirable by the physicians in the hospital where she was housed.

In February, 1905, the patient was removed to the Polyclinic Hospital and placed under the care of Dr. J. H. Gibbon, at whose request the writer made a second ophthalmological examination, when it was found that the left eye was now proptosed directly forwards to such an extent that all of its movements were much impaired. The upper lid almost covered the pupil, which was 4 mm. in size and the iris was but slowly responsive to light stimulus. The optic nerve was pale and both retinal arteries and veins were full and tortuous, particularly the latter. Vision equaled 5/15. The left field was concentrically contracted, both for form and color, and contained an absolute scotoma for form and color at the fixation point. The right eye was normal, save for a slight fullness in the retinal veins. As the patient was delirious and the ocular and nasal examinations demonstrated marked symptoms of pressure within the orbit, after consultation with Dr. Freeman, Dr. Gibbon decided to operate, and with the assistance of Dr. Freeman and the writer this cavity was incised and drainage effected through the ethmoidal cells into the nose. But viscid mucus was contained in the cells. Dr. Freeman accordingly opened the posterior ethmoidal cells, through the nose, and passed into a roomy cavity, the limit of which he could not determine. Both the anterior and lower walls of the sinus were absent and the dead bone could be felt in the roof. At this juncture the patient's condition became so critical that further procedure was deemed undesirable and the operation was interrupted. Consciousness, however, was never regained, the patient dying the next day with meningeal symptoms.

As no sarcomatous tissue was encountered at the first operation or in any of the other incisions, the assumption is likely that the case was one of inflammation of the sinuses merely, probably originating in a mucocele of the posterior ethmoidal cells, and, as stated at the commencement of the report, had the writer's advice been taken when the diagnosis of the nasal origin of the affection was made clear, and had the cells been properly opened, it is fair to suppose that the fatal termination might have been avoided.

In the observation which Dreyfuss[2] made of the postmortem histories of fifty fatal cases of sinusitis, and which have recently been supplemented by Moritz by twenty-six additional,[3] the cerebral involvement in most of these cases was found to be due to a perforation which had resulted either from an inflammatory process or syphilis, rarely tuberculosis. In many instances, however, no alterations could be detected in the bone itself, though the dura mater was inflamed, the complications being due to infective thrombosis.

Of all the cells, inflammation of the frontal appears to give rise to intracranial lesions the most frequently, the infection usually occurring as a consequence of perforation of its posterior wall with consecutive abscesses in the frontal lobe. The infection in ethmoiditis, which occurs through the lamina cribrosa, is rapid and gives rise to general meningitis or frontal abscess. Meningitis and thrombosis of the cavernous sinus may be set up by sphenoiditis, and Dreyfuss in his series of cases noted five instances of cerebral complications following antral diseases.

The position of the ophthalmologist in the treatment of sinusitis is threefold—that of diagnostician, consultant and surgeon. It behooves us, therefore, to acquaint ourselves well with this field and to develop its ophthalmological phase to a degree commensurate at least with its rhinological.

SOME OBSERVATIONS ON THE COLOR SENSE AND VISUAL ADAPTATION OF BIRDS.

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The comparative physiology of vision is a science which to the present time has been little cultivated; indeed, the difficulties of such investigations are extraordinary. Nevertheless, it would seem that a number of important ocular questions can be decided only by comparative studies.

I have made some experiments in an attempt to settle the question whether dark adaptation is a function confined to the retinal rods and whether cones are able to "adapt" for darkness or not.

M. Schultze found that the retina of day birds contain almost exclusively cones; the retina of night birds almost exclusively rods. He concluded, therefore, that cones are the elements for vision in daylight and for the color sense and that the rods are the elements for vision in a dim illumination and do not perceive colors at all. Later Kühne showed that the visual purple is to be found in the rods and never in the cones. Parinaud put forward the hypothesis that adaptation for dark is caused merely by the accumulation of purple in the rods. This view was supported by the fact that the human fovea, which has no rods, is not able to adapt for darkness to the same extent as the extrafoveal parts of the retina that are well supplied with rods.

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[2] Krank. d. Gehirns in Folge von Naseneiterungen, June, 1896

[3]. Brit. Med. Jour., Jan. 28, 1905.

Parinaud was mistaken when he assumed that our fovea lacks adaptation entirely. Hering and his school have shown in various ways that foveal adaptation is not altogether wanting, but that it is less complete than in other parts of the retina. This incomplete foveal adaptation was by some authors supposed to be caused by small quantities of visual purple which might have penetrated from the rods into the cones.

The hypothesis of Parinaud, which supposes that adaptation is produced merely by visual purple, was supported by the assertion that day birds are hemeralopic, because their retina contains merely cones, while rods and visual purple are wanting. This view has been accepted by many writers, but has never been experimentally proven.

I have endeavored to elucidate this question by deciding whether day birds are able to adapt or not and, among others, made the following experiments. I found that hens picking up wheat grains are directed exclusively by their eyes; *they pick only when they see the grains.* If one allows them to feed with the grains scattered over a black ground, which is so illuminated that the shadow of a thin lath, or staff, falls on the middle of the lighted areas, the hen picks up all the grains to the right and left of the shadow, but does not touch the grains upon the shadow. When the intensity of light has diminished to a certain degree, the hen ceases to feed altogether. In a completely dark room it rarely happens that the hen tries to eat even when very hungry.

In these experiments we may measure the intensity of light, using, as the only aperture through which it is admitted, an Aubert's diaphragm or an iris diaphragm, the diameter of which is marked in millimeters. If we now bring a hen, which had been light adapted, into the dark room with the diaphragm open sufficiently, the hen, when put on the black ground with the wheat grains will at once begin to eat them. If we now diminish the opening in the diaphragm until the hen ceases to pick and repeat this experiment a number of times with other hens that have been equally light-adapted, we shall almost always find exactly the same diameter of diaphragm; that is, the same illumination. If now we repeat the experiment on our own light-adapted eyes and endeavor to find the point at which the grains cease to be distinctly visible to us on the black background, we find we require about the same intensity of light as for the hens when they cease to see the wheat grains and stop feeding.

We now place the hen in a completely dark room for an hour and remain ourselves the same time in the dark; then we open the diaphragm again until the hen begins to pick and diminish it again gradually. We now find that it continues picking after the intensity of illumination has become far less than that at which the light-adapted hen ceased to pick. And in comparing one's own dark-adapted eyes, one also finds that with the diminished illumination the grains cease to be distinctly visible at about the same intensity that the hen ceases to pick.

It is less difficult to conduct such experiments with hens than with pigeons, although I find with the latter almost the same limits as for hens. It is interesting and important, for several theoretical questions, to know that albinotic pigeons behave almost exactly like the other varieties.

These experiments prove that day birds, in whose retina rods are almost completely absent, show a very marked adaptation, the degree of which seems even to be not very different from that of the human eye. This fact is important in considering the theory of adaptation, inasmuch as it indicates that adaptation must exist independently of the retinal rods.

These results also made it necessary to study the question again to decide whether visual purple is really wanting entirely in hens' and pigeons' eyes. This query had been difficult to settle because the retina of these birds contains an enormous number of red and yellow "fat-balls," the color of which is resistant to light and makes it impossible to see, whether the percipient layer contains visual purple or not.

I, therefore, endeavored to dissolve these colored balls by means of some liquid which would have no influence upon visual purple. For this purpose I found benzol suitable; it removes the fatty globules so quickly that when there is no purple in the retina we find it an almost white or light yellow membrane. In this way I was able to show that at least the retina of hens is nearly entirely without visual purple. Consequently in these birds there must exist an adaptation independent of the visual purple.

The fact that hens and pigeons are directed merely by their eyes when they feed induced me to try another series of experiments on their color vision. By means of a mirror and an electric lamp of high power I projected on to the floor an objective spectrum. This was spread over a black ground upon which wheat grains were distributed so that they appeared in the red, yellow, green, blue, violet bands.

Hens placed near these spectral colors generally begin to pick the red grains first; after that they turn to the yellow and green grains; the blue and violet grains are not picked by hens adapted for daylight, even when these grains appear to our eyes brighter than the red grains which were easily selected by the hens. When the birds cease to feed we find that they have eaten out a space in the wheat grains, one end of which corresponds exactly to the red end of the spectrum as seen by our eyes; the other end corresponds to the greenish-blue or blue rays of the spectrum.

These experiments show that, in comparison with our color vision, the hen's eye sees the spectrum at the red end exactly as far as we do, but at the other end it is much shortened. The hen sees only the green and blue-greenish grains, but scarcely, if at all, blue and violet grains. If we diminish the brightness of the spectrum to that point where it appears colorless to our dark-adapted eye, it is seen to be brightest in the green. Under these conditions the hen adapted for dark picks only the grains which correspond to the yellow or reddish-yellow rays.

The retinal cones of hens and pigeons contain between their inner and outer segment what has been referred to as fat-balls. In order to imitate to some extent these conditions, I placed before my one eye a red glass, before the other one a yellow glass. I then saw the spectrum at the red end as far as I had done with the naked eye, but at the other end only as far as the bluish-green rays; the blue and violet grains were quite invisible to me, when the intensity was diminished sufficiently. The colorless spectrum appeared brightest in that section which corresponds to the yellow or reddish rays; that is where the hen sees the grains.

These experiments indicate that hens (and pigeons) see the spectrum approximately as we do through yellow and red glasses and, consequently, that their color sense may be similar to ours.

Our experiments also developed another important fact. Up to the present we have known, through the experiments of Heinrich Müller, that the cones and rods form the percipient apparatus of the retina, but it has been unknown whether the inner or the outer segment of these elements is the organ of perception. Our experiments allow us to answer this question. Since all the rays of the spectrum equally impinge on the inner segment and the colored fat-balls separate the inner segment of the cones from their outer, it must be the outer segment from which the sensation of light is carried to the nerve fibers; it is as if there were small red and yellow screens before the perceptive outer segment of the cones.

I believe that these colored balls have for their function the protection of the outer layers of the bird's retina against the short-waved rays, in the same way that the yellow color of the macula lutea protects the cones of the human retina.

I hope the methods described here may be employed in increasing our knowledge of color vision in other animals than birds.

THE ASTIGMIC LENS (CROSSED CYLINDER) TO DETERMINE THE AMOUNT AND PRINCIPAL MERIDIANS OF ASTIGMIA.*

Edward Jackson, M.D.

DENVER.

[Illustrated]

The traveler rises a mile in coming from the Mississippi river to Colorado without noticing the departure from the level. In walking across a level floor in which there is a break of a single inch, the change of level can not be ignored without unpleasant consequences. *All changes of sensory impressions are perceptible and striking just in proportion as they are sudden.* In subjective testing of ocular refraction the perception of a change of lens, the certainty of its recognition on the part of the patient, the definiteness and reliability of the patient's answers regarding such change, depend on the suddenness of that change.

It may be necessary to allow the patient time to familiarize himself with the appearances presented by each combination of lenses; and individuals differ greatly in the length of time they require for this process. But the change from one combination to the other should be sudden.

Recognition of this condition of accuracy has led to the general use of supplementary spherical lenses, changing from one spherical to another by suddenly placing before the eye an additional spherical lens, or suddenly withdrawing it. The use of the supplementary lens makes the change sudden, and permits it to be rapidly repeated, securing certainty of results and saving of time. The supplementary lens is still more important in the estimation of astigmia, in proportion as astigmia is more difficult to determine with exactness, and as the same change of cylindrical lens produces less change of visual acuteness. In a paper read before the American Ophthalmological Society in 1887[1] I called attention to this use of the astigmic (astigmatic) lens, a form of which was first described by Stokes in 1849.

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*Read before the Colorado Ophthalmological Society.

"The astigmatic lens has with regard to one axis the action of a convex cylindrical lens, and with regard to the axis perpendicular to the former the action of a concave cylindrical lens of equal refractive power. Such a lens is made by combining either convex and concave cylindricals, of equal refractive power, with axes perpendicular, or a spherical of one kind with a cylindrical of the other kind of twice the strength."

Stokes,[2] and Dennett[3] who suggested a modification of the lens, proposed to use it alone, letting it take the place of the cylindrical lenses usually found in the trial case. I suggested its use as a supplementary lens to be held in front of the approximate correction, to determine if a cylindrical lens, or a modification of the cylindrical already chosen, would improve it. From that time it has been more useful and more used than any other lens in my trial set.

For illustration, suppose a case in which the best vision obtainable with spherical lenses is 20/20 partly, with a plus 1.50 D. lens. To try if this can be improved upon, put before it an astigmic lens and revolve its axis over a semicircle. If regular astigmia of practical importance be present, vision will improve with the axis turned one direction and be worse with the axis at right angles to this. Suppose it best with the plus axis at 90 degrees. Remove the first lens and substitute + 1.25 ⌣ + 0.50 cy. ax. 90°. Vision is improved to, say, 20/20 full. Again, try the astigmic lens, with its axis first at 90° and then at 180°; if it blurs the test type equally in both directions, no improvement of vision will be obtained by further change in the strength of the cylindrical.

To show the advantage over the simple cylindrical lens for this purpose, suppose in this same case we held a plus 0.50 cy. before the plus 1.50 sph. Whatever direction it might be turned it would almost equally tend to blur the test type. With the axis at 90 degrees it would over-correct by 0.50 D. a meridian before perfectly corrected, while at 180 degrees it would have doubled the over-correction of the meridian previously over-corrected. And if there were any choice between the two it might be in favor of the latter.

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1. Jackson: Trans. Am. Ophth. Soc., vol. iv, p. 596.

2. Stokes: Report of the British Assn. for Advancement of Science, 1849, p. 10

3. Dennett: Trans. Am. Ophth. Soc., vol. iv, p. 106.

so that the indications obtained by its use would be altogether misleading. Of course, in this case one could get aid from a concave 0.50 cylinder. But if uncorrected astigmia be present the astigmic lens always improves vision with its axis in one direction and makes it worse with its axis perpendicular to that direction.

It seems strange that such a simple, inexpensive and important practical addition to the trial set has not come into universal use. This feeling is not merely that of the proposer of the test. Let me quote from the little book by E. E. Maddox,[4] which embodies another description of the method of using it. After discussing other subjective tests for astigmia, he says:

"Place a Jackson's crossed cylinder with axis coincident with that of the already chosen trial cylinder and reverse it. In one position it supplements the chosen cylinder, and in the other it detracts from it. If the former give the better vision strengthen the cylinder a little and try again; but, if the latter, then weaken the cylinder and try again with weaker crossed cylinders until their reversal makes no difference in the visual acuity.

"What advantage, it may be asked, has a crossed cylinder? It gives a purer test for astigmatism than an ordinary cylinder, since it affects both meridians equally and in opposite ways. For example, a myope of 3.5 D. with a — 3 D. sph. lens in position would welcome a — 0.5 D. cylinder, because it half corrects his remaining myopia (i. e., corrects it in one meridian). He would not care for a crossed cylinder unless he really had some astigmatism, since it increases his myopia in one meridian as much as it lessens it in another. Crossed cylinders, as soon as they are well known, will be universally used." Schneideman[5] says: "We have never known any one who has learned to refract with it to abandon the method. It gives a sense of confidence in the result that can not be acquired in any other way."

Others have spoken or written in similar strain with regard to the astigmic lens, but I believe always with reference to its use in determining the strength of the cylinder required for the correction of the astigmia, never of using it to fix the direction for the cylindrical axis. This seems strange when the value of the astigmic lens as a means of fixing the direction for the cylindrical axis comes to be understood. Especially strange does it seem to me that I employed such lenses for twenty years, to estimate the strength of the cylinder, without appreciating their great superiority for fixing the direction of the axis, although for several years I had occasionally employed them for this latter purpose.

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[4] Maddox: Golden Rules of Refraction, p. 39.
[5] Schneideman: Ophth. Record, April, 1900.

TO DETERMINE THE DIRECTION FOR THE CYLINDER AXIS.

To understand this latter use of the astigmic lens it is necessary to bear in mind certain facts regarding the combination of cylindrical lenses in general. It has been pointed out by Donders,[6] Hoorweg,[7] myself,[8] Hay,[9] Prentice,[10] Weiland[11] and Wilson[12] that two cylinders superimposed with their axes not in the same direction have the cylindrical effect of a third cylinder with its axis placed in a different meridian from the axes of either of the component cylinders.

For illustration, suppose plus 1 cy. with its axis at 90 degrees placed before the eye. Combine this by holding in front of it an astigmic lens having 1 D. of cylindrical effect. If the latter be placed with its plus axis (axis of convex cylinder) at 45°, the effect of the two cylinders will be equivalent to a cylinder with its axis placed at 67.5 degrees. If the astigmic lens be placed with its plus axis at 135°, the effect produced will be that of a cylinder with its axis at 112.5 degrees. These changes are illustrated in Figure 1, in which the axis of the cylinder in the trial frame is shown by a solid line; the plus axis of the astigmic lens by a broken line, and the axis of the resulting cylinder by a dotted line. In A the astigmic lens has its axis placed at 45 degrees; in B at 135 degrees. The effect of changing the axis of the astigmic lens from 45° to 135° is the changing of the total effect from 67.5° to 112.5°.

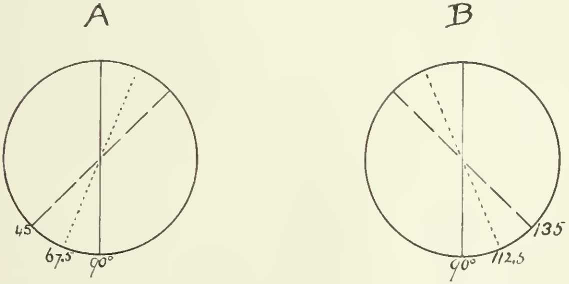

Figure 1

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[6] Donders: Accommodation and Refraction of the Eye, p. 496.

[7] Hoorweg: Graefe's Archiv. für Ophtalmologie, vol. xix, 1873.

[8] Jackson: Trans. Am. Ophth. Soc., vol. iv, p. 268

[9] Hay: Trans. Am. Ophth. Soc., vol. iv, p. 384.

[10] Prentice: Dioptric Formulæ for Combined Cylindrical Lenses, 8 vo, pp. 48, N. Y., 1888.

[11] Weiland: Archives of Ophth., vol. xxii, 1893, p. 435; vol. xxiii, p. 28.

[12] Wilson: Ibid, vol. xxvii, 1898, No. 1, p. 19.

If the astigmic lens be weaker, the change in the direction of the resulting axis will be less. Thus, supposing again a plus 1 cy. axis 90° in the trial frame and holding before it an astigmic lens having a cylindrical effect of 0.5 D. When the plus axis of the astigmic lens is placed at 45° the directon of the axis of the resulting cylindrical effect will be 77°. With the astigmic lens placed at 135° the axis of the resulting cylindrical effect would be found at 103°. The change in the direction of the astigmic lens is equivalent to shifting the cylinder before the patient's eye from 77° to 103°.

Using an astigmic lens of 0.25 D. cylindrical power. the effect would be that of shifting the lens in the trial frame (1 D.) from 83° to 97°; the astigmic lens still being placed with its axis at 45° and 135°.

In general the astigmic lens produces its greatest effect of shifting the axis when held with its axis at an angle of 45° from that of the lens in the trial frame. The astigmic lens should be so mounted that its handle is placed midway between the axis of the plus cylindrical effect and the axis of the minus cylindrical effect. When this is done, rotation of the handle reverses the astigmic lens, shifting its axis from 45° to 135° or *vice versa*.

METHOD OF USING.

In practical use the *strength* of the cylindrical already in the trial frame is modified by placing the *axis of the astigmic lens parallel to its axis* and rotating. To do this the handle of the astigmic lens makes an angle of 45° with the axis of the lens in the trial frame.

To determine the *direction* for the cylindrical axis the *axis of the astigmic lens should be placed 45°* from the axis of the lens in the trial frame; or the handle of the astigmic lens in its direction, the axis of the latter being 45° from the handle. In this position rotating the astigmic lens so that first one face is toward the eye, then the other, causes the axis of the convex cylindrical effect to turn first 45° one way from the axis of the lens in the trial frame, then 45° the other way.

ADVANTAGES OF THE ASTIGMIC LENS.

Other methods of testing for the axis of a cylindrical lens depend on turning the lens from one position to another through all intermediate positions. Or, where the determination is made with spherical lenses and parallel test lines, the lines are turned thus from one position to the other. The rotation of the astigmic lens so that it faces first one way, then the other, is absolutely sudden. Before the impression made with the lens in one position has time to fade from the retina the impression made with the lens in the other position is already presented. The change is instantaneous, the condition of strongest contrast, and most favorable for rendering perceptible, or distinct, a difference in clearness between the two images obtained in these different positions.

This theoretical superiority of the astigmic lens is fully established by practical tests. With it the axis of a weak cylinder can be placed more rapidly, more certainly and more exactly before the proper meridian than by any other known method. The limits of probable inaccuracy are reduced to one-half or one-third of those attending the ordinary use of trial cylinders.

It may be noticed that this use of the astigmic lens with its axis 45° from the axis of the lens in the trial frame gives a combination that not only has its axis in a different direction, but also has a different cylindrical strength and a different spherical combined with it. These changes tend to impair or improve the vision obtained. But they do not in the least interfere with the contrasting of the vision in the two positions—the contrasting of the effects of shifting the axis equally first one way and then the other.

By what has already been said it will be seen that the amount of change in the axis of the combination, produced at each reversal of the astigmic lens, varies with the proportion of the strength of the astigmic lens to that of the lens in the trial frame. The stronger the lens in the trial frame the less change of axis does an astigmic lens of a certain strength produce. The weaker the lens in the trial frame the more change of axis does a given astigmic lens produce. This is a distinct advantage. A strong cylinder needs to have its direction changed but slightly to cause a noticeable change in the distinctness of vision. A weak cylinder must have the direction of its axis more widely shifted to give the same noticeable effect on vision.

In general an astigmic lens of a given strength, thus used, will produce about the same alteration of vision whatever the strength of the lens in the trial frame; just as is the case with supplementary spherical lenses. The acuteness of vision of the patient with the lens in the trial frame is, therefore, a reliable guide as to the strength of the astigmic lens that should be used. With vision of 4/10 an astigmic lens having a cylindrical effect of 1 D. (+ 0.50 cy. ○ — 0.50 cy.) may be used. With vision of 4/6 the astigmic lens of 0.5 D. (that is, + 0.25 cy. ○ — 0.25 cy.) will serve best. When vision has been brought up to 4/4 or better, we can use the 0.25 D. astigmic lens (+ 0.12 cy. ○ — 0.12 cy.).

A CASE OF GUMMATOUS IRITIS.

R. W. Rutherford, M.B. [Tor.].

CHATHAM, ONTARIO, CANADA.

Gummatous iritis does not, as the name might imply, belong to the tertiary period of syphilis, but to the late secondary.

Mrs. S., aged 26, married, came to my office one Saturday morning complaining of severe pain in her left eye, preventing her sleeping the night before. On inspection I noticed marked pericorneal injection, iris sluggish but not discolored, pupil oval and no lacrimation, but slight photophobia. I ordered dark glasses and atropin, 1 per cent., also hot applications for pain. Next day the pupil was dilated from the use of the atropin, but irregular. On the part of the iris not dilating (the pupillary margin) was noticed a yellowish nodule, which projected into the anterior chamber. The next day nodule larger and more vascular, color having changed to a dirty brown, pain very severe, for which I prescribed dionin with good success.

Diagnosis rested between tuberculous and gummatous iritis, with preference to the latter, although the patient gave a negative history of syphilis. I started her on Hutchinson's pills, four a day, increasing in a few days to eight; also gave her five drops of saturated solution of potassium iodid after each meal, increasing a drop a day. The patient began to improve under antisyphilitic treatment, and after a week of it one part of nodule had begun to disappear. Two days later half of the nodule had yielded, and after eleven days of mixed treatment it had entirely disappeared, leaving a scar on the anterior surface of iris. Injection was decidedly less. Patient continued her medicine, and the eye was soon back into its normal condition.

According to Berry, the changing of color of the nodule from yellow to a dirty brown points toward gummatous iritis. Also the tumor formation in this condition is more apt to spring from the parenchyma of the iris surrounding the pupil, while in tuberculous iritis the tumor formation has a predilection for the peripheral part of the iris in the neighborhood of the angle of the anterior chamber. Tubercles are more numerous. These points mentioned by Berry are all well corroborated in the above case.

In conclusion, in any case where there is any doubt in diagnosis, whether the case is one of tuberculous or gummatous iritis, I would always advise the trial of antisyphilitic treatment first, as by this means a diagnosis can often be made.

A CASE OF EPITHELIOMA OF THE LID HEALED BY THE LOCAL APPLICATION OF CHLORATE OF POTASH.*

William Zentmayer, M.D.

PHILADELPHIA.

S. S., aged 55 years, came to Wills Hospital, stating that, eight years ago, he had had a mole burned off of the skin of the lower lid of the left eye. This was followed by the formation of a pimple which subsequently broke down. There has been no pain. At times there has been a slight bloody oozing.

There is a triangular ulcerated area involving the skin of the lower lid, with its base extending along the free margin from the inner canthus to a point beyond the median line. The apex is situated about 2 cm. below this and still a little further beyond the middle line. The inner half of the ulcer is much deeper than the outer and is covered by a brownish dry secretion. The margins are irregular and indurated. There is ectropion of the lower lid.

At the suggestion of Dr. Frank Fisher, one of my colleagues, applications of powdered chlorate of potash were made to the surface of the ulcer, at first daily, later every other day. The surface was first cleansed of its dried secretions and then the potash was thoroughly rubbed into the floor and edges of the ulcer. Little improvement was shown at the end of the first week, but from that time on the ulcerated area gradually grew smaller and is now entirely healed. There is but little ectropion. At the mucous edge there are exuberant granulations.

At this date, July 5, 1907, there has been no relapse.

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*Patient shown at Section on Ophthalmology, College of Physicians, Philadelphia.

Reports of Societies.

ST. LOUIS MEDICAL SOCIETY—OPHTHALMIC SECTION.

Meeting April 10, 1907.

The Chairman, Dr. Barck, in the Chair.

A CASE OF PERFORATING INJURY OF THE SCLERA.

Dr. H. Muetze presented this case. The patient, a carpenter, 37 years of age, was struck in the left eye by a No. 9 nail. There was a vertical scleral wound close to the limbus on the outer side, with prolapse of the iris and a small quantity of vitreous. The anterior chamber was filled with blood and there was hemorrhage into the vitreous. The protruding iris and vitreous were abscised and the wound sutured. Vision has risen from hand movements to 20/xxv.

A CASE OF DYSCORIA BILATERALIS.

Dr. C. Loeb presented a case of dyscoria bilateralis. In both eyes the pupils are pear-shaped, with the stem of the pear turned downward; in the right, it is nearly straight down; in the left, it makes an angle of nearly 45 degrees with the vertical meridian. There is no coloboma of the chorioid.

PERSISTENT PUPILLARY MEMBRANE (POLYCORIA?)

Dr. C. Loeb also presented a case of persistent pupillary membrane (polycoria?).

Parsons, in his work on pathology of the eye, objects to this term and asserts that "polycoria" should be used only in case of loss of substance occurring in the iris itself.

Persistence of the pupillary membrane is a developmental anomaly and is due to lack of absorption of the fetal membrane which covers the pupillary area. It was first described by Adolph Weber in 1861. Possible arrangements are: 1. Several fibers arising at different points of the lesser circle stretch across the pupil and form a delicate network. 2. Fibers run tangentially between two points on a lesser circle. 3. All the toothed projections of the small circle are prolonged inward and project beyond the pupillary margin. 4. The fibers float free at their inner extremities. 5. Loops are formed by pairs of fibers in front of the pupil. 6. A network of fibers unites in pupillary area into a membranous plaque. 7. Fibers are adherent at their inner extremities to lens with or without the formation of a plaque, or presence of anterior capsular cataract. 8. Fibers adherent to back of cornea. Not polycoria.

This case does not fall in any of the above categories, as there are three distinct pupils, which dilate and contract similarly to the normal pupil.

Dr. J. F. Shoemaker reported a case of

CENTRAL RETINOCHORIOIDITIS ASSOCIATED WITH A PECULIAR EXUDATE (?) INTO THE VITREOUS.

The latter is best seen with plus five or six behind the mirror and has the appearance of an almost perfect circle. It is situated two discs to the nasal side and extends four or five discs to the temporal side, so that this circular exudate surrounds the macular region. It is about the width of a retinal artery and the same width continuously practically the entire circumference. Dr. Shoemaker was in doubt as to whether it was an exudate or a development anomaly.

In the discussion, Dr. Wiener stated that in view of the regularity of the caliber of the structure and on account of the projection below it might be a peculiar remnant of the hyaloid artery. He called attention to several little threads, especially to the nasal side, which resembled branches that had been absorbed. Dr. Barck regarded the case as unique, and agreed with the former speaker that it was a congenital anomaly, probably an accumulation of condensed fibers in the vitreous. He was in doubt as to whether the condition in the macular region was to be regarded as a central regular chorioiditis or a congenital coloboma.

A METHOD OF INSTILLING COLLYRIA.

Dr. M. Wiener demonstrated his method of using an applicator wrapped with a small piece of cotton for the purpose of instilling drops in the patient's eye. He considered it as easily managed as a dropper and certainly cleaner.

MASSAGE IN TRACHOMA.

In the opinion of the author, Dr. M. Wiener, massage should always be from the fold of the lid towards the edge, and never back and forth or from side to side. After a few moments rubbing, a sticky mucous secretion appears, and the follicles can be seen to empty rapidly.

Dr. C. Loeb read a paper on

PAPILLOMA OF THE CARUNCLE, WITH REPORT OF A CASE.

The literature dealing with the caruncle is very scant. The anatomy and physiology are dismissed in a few words even in the large text-books on ophthalmology. Its diseases are usually discussed under the head of the diseases of the conjunctiva. It may.

however, be the sole seat of a disease, which in this case is a tumor, to which the name encanthis is given.

The most usual form of tumor of the caruncle is probably melanotic sarcoma. Papilloma is one of the rarest, only 12 cases having been found in the literature, where the diagnosis was confirmed microscopically. These are as follows: 1 each reported by Veasey, Posey and Shumway, Secondi, Roselli, Kubli, Franke, Terrien, Hirschberg and Birnbacher, Weeks, and Parisotti; 2 reported by Testellin. To this should probably be added a case of Desmarres, where the tumor was not removed. The author's case was that of a very small tumor of the left caruncle, which was diagnosed as a papilloma and removed by the scissors. The base was cauterized with the electrocautery needle. All reaction subsided in three days. No signs of return when last seen, nearly two months after operation.

John Green, Jr., *Secretary.*

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of April 20, 1907, in Denver.

Dr. Melville Black presiding.

TRAUMATIC DISLOCATED LENS AND FOREIGN BODY IN EYE.

Dr. D. H. Coover, of Denver, showed a man of 40 who had been injured in an explosion, November, 1906, one eye being totally destroyed. The other presented multiple corneal scars; opaque lens, dislocated upward and adherent to the iris; slightly increased tension, and V. = light perception in lower field. Dr. Coover thought it probable that the eye contained a foreign body, either in the lens or the vitreous.

Discussion.—Dr. Neeper would use dionin locally unless the *x*-rays showed a foreign body. He spoke of a case of linear haziness caused by a splinter of steel passing through the lens, in which the opacity disappeared under dionin applications.

Dr. Strickler would needle rather than extract the lens if the *x*-rays revealed a foreign body elsewhere than in the lens.

Dr. Jackson advised dionin to promote absorption of the lens, which, however, he thought of very doubtful efficacy in this case. The operation of choice would be an incision in the superior temporal quadrant, extraction with a loop, and central iridectomy.

Dr. Bane suggested discission with a Graefe knife, keeping the corneal wound open a few days to reduce tension.

CRESCENTIC CORNEAL OPACITY.

Dr. D. B. Strickler, of Denver, presented a woman of 32, with a crescent of corneal opacity near the outer limbus. Four months previous she had shown episcleritis at the inner corneal limbus of the same eye, which yielded to yellow ointment, followed by hot applications and dionin.

Discussion.—Dr. Neeper advocated K. I. in small doses for episcleritis, and Dr. Bane, 5 per cent. cinnimate of soda injections, on the ground of tubercular causation.

BINOCULAR VITREOUS HEMORRHAGE.

Dr. Melville Black, of Denver, presented a man, aged 26, who had been under his observation for nineteen months. During that time he had two hemorrhages into the vitreous of the left eye at an interval of eleven months. This eye recovered with normal vision, but with considerable retinal scarring. Recently a hemorrhage into the vitreous of the right eye had occurred. At the first hemorrhage there was a blood pressure of 165 mm., with a heart normal in size, and marked indicanuria. The treatment given was directed toward lowering the blood pressure and correcting intestinal decomposition. The first two vitreous hemorrhages rapidly cleared. When the vitreous hemorrhage appeared in the right eye the conditions were reversed; his blood pressure was low, 115 mm., and his heart was found to be stretched to the extent of the apex, being to the right of the sternum. He had no evidence of intestinal decomposition.

This hemorrhage was ascribed to passive congestion, and strophanthus and nux vomica were prescribed. His recovery was rather slow, but there were no setbacks. The last hemorrhage was in the eye, which had heretofore been normal. His heart was found to be considerably dilated. The apex was found to extend from ½ inch to left of nipple in sixth interspace to right side of sternum 1¼ inches. Blood pressure, 132. He had marked indicanuria. Dr. E. C. Hill decided that the hemorrhage was due to passive congestion from the dilated heart, and gave strophanthus and nux; also sodii sulphocarbolate for the intestinal fermentation.

Discussion.—Dr. E. C. Hill said that enlarged heart was next as common as nasal catarrh, that Chicago reported four times as many deaths from enlarged heart as from valvular lesions, and considered the most difficult cases to be those of enlarged right ventricle with passive congestion.

DOUBLE OPTIC NERVE, WITH TABES.

Dr. G. F. Libby, of Denver, showed a man of 40 with a history of syphilitic infection eighteen years previous, excessive use of alcohol and tobacco until three years before, and severe injuries to one hip, the symphysis pubis and the upper jaw in a railway wreck in 1903. He had first discovered the vision of the left eye to be lowered six years ago.

In January, 1907, he presented himself for examination, stating that his sight had failed in the past three months, the left being more progressive. R. V. = 4/v, L. V. = 1/xiv. Left pupil dilated, reacting feebly to light and consensually. Both pupils reacted to convergence. Right knee reflex increased, left decreased; tabetic gait. Accommodation, right = 5 D. The discs showed white atrophy. The treatment consisted in Hg. bichl., gr 1/120 to 1/40 t. i. d.; K. I., gr. 5 to 75 t. i. d.; strych. sulph., gr. 1/60 to 1/8 t. i. d. After one month's treatment the vision remained unchanged or possibly slightly improved. In the next two months it gradually fell to R. V. = 4/xxii partly, L. V. = light perception.

Discussion.—Dr. Black advised hypodermic injections of hydrarg. salicylate. Drs. Stevens and Coover would push strychnia hypodermatically, the former giving it in the temples, the latter using the nitrate. Dr. Neeper considered the prognosis bad, as did all present, but would crowd the iodid of potash and mercury, especially the latter. Dr. Jackson advocated occasional use of calomel for a few days, until the bowels were well acted upon, to guard against autointoxication, and the use of strychnia hypodermically to the point of toleration.

NEURO-RETINITIS WITH ARTERIOSCLEROSIS.

Dr. Black reported a woman who came to him, January 19, complaining of a general diffused pain in her head, also a central blind spot in the right eye. Her vision was: R. = 20/xl, L. = 20/xx. The ophthalmoscope showed right neuroretinitis, with hemorrhages and spots of retinal degeneration. The left eye was found to be in the incipient stage of the same condition. She was referred to Dr. E. C. Hill for examination, who reported blood pressure of 240 mm., large quantity of albumin and granular casts. She made steady improvement under Dr. Hill's management, with complete restoration of vision and very marked improvement in the neuroretinitis. This case illustrated how a very high blood pressure may be responsible for the headache and ocular complications in chronic Bright's, and how sharp the improvement may be when the blood pressure is reduced.

This case also illustrated ophthalmoscopically the changes in the vessel walls, showing the "bendings" at the crossings as well as the opaque vessel walls, also the increased size of the veins prior to their being crossed by arteries.

ALBUMINURIA OF PREGNANCY; DEATH.

Dr. J. R. Robinson, Colorado Springs, reported intense neck pains and sudden blindness in a woman of 25, who was six and one-half months pregnant.

The attending family physician reported the urine to be "loaded with albumin." Abortion was advised, but refused. Then thorough catharsis was employed, resulting in restoration of vision. Two weeks later coma supervened, lasting half a day, when death occurred. The media and fundus were not examined.

Discussion.—Dr. E. C. Hill said that the fall of urea was more important than the amount of albumin, and that eclampsia occurred without albuminuria. He would investigate the liver and the amount of urea. Dr. Black thought that enlarged heart, raised blood pressure and indicanuria were conditions of paramount importance in relation to intraocular disturbances. Dr. Jackson spoke of the limited area, of varying locality, usually affected in arteriosclerosis.

Dr. E. W. Stevens said that toxemia of pregnancy is one of the most important problems in medicine to-day. The modern conception of this subject makes it responsible for eclampsia and the pernicious nausea and vomiting of pregnancy. The presence or absence of albumin in the urine is now regarded as of secondary importance. The best knowledge to-day leads obstetricians to believe that the toxemia of pregnancy is not essentially of nephritic origin. The blood serum in these cases has been found to be the toxic agent. It will cause death of animals with convulsions and characteristic changes in the important organs. Modern investigation has shown that the kidneys are but slightly responsible, while the liver is the organ most frequently diseased. The lesions of the liver are much like those of acute yellow atrophy. The nature of the poison which produces toxemia and eclampsia is entirely unknown, its presence in the blood is indicated by headache, unusual mental conditions, altered secretion and excretion, and disturbance in the sensory apparatus. To the ophthalmologist the most important sensory disturbance was the affection of the sight, which varies in different cases from slight failure of vision to complete blindness. The ophthalmoscopic examination may show a normal fundus, the blindness being cortical; or, on the other hand, there may be all the eyeground changes of renal retinitis. It was important for the ophthalmologist to bear in mind that neither the disturbance of vision nor the retinal changes were essentially of renal origin, but were in many cases due to a toxemia of pregnancy, the nature of which is at present unknown.

CALCAREOUS BANDS IN CORNEA.

Dr. Jackson reported a primary horizontal calcareous band extending across each cornea and the width of the palpebral opening in an adult woman. V. = 4/xlv each eye. Corneal reflex perfect. Under holocain the bands were curetted, the central portion coming off easily, the peripheral with more difficulty. No staining by fluorescein after 24 hours. Bowman's membrane only was the seat of the deposit. Ultimate vision: R. = 4/xii, L. = 4/ix partly.

Discussion.—Dr. W. L. Hess reported a similar case with a vertical band 1½ mm. wide extending across the cornea, in a man of 65, stating that he scraped it off with resulting V. = 6/xiii.

DIONIN IN PTERYGIUM.

Dr. Coover reported the use of dionin, 4 or 5 per cent. solution, before and after six operations for pterygium, showing marked absorption of the growth, making the operation less difficult and the after-treatment and result more satisfactory.

GLIOMA, SARCOMA, OR RETINAL DETACHMENT, (?)

A child of 4 years, who had pertussis with convulsions at 2, after which one eye diverged, was also reported by Dr. Coover. Recently he had noticed a yellowish gray floating mass behind the lens, with fine cholesterin bodies in the retina, in the same eye. No pain. Ophthalmoscopic and oblique examination showed a floating retina on the nasal side. The optic nerve was invisible. T. = plus, which was lowered on using a mydriatic. Cornea and conjunctiva normal.

Discussion.—Dr. Jackson thought cholesterin argued against a new growth, and that there probably was an old retinal detachment, with cystic degeneration. He advised examination by transillumination.

ELECTION OF OFFICERS.

Dr. G. F. Libby was re-elected secretary, and Dr. Melville Black, treasurer. Dr. D. B. Strickler was elected chairman of the executive committee.

SECRETARY'S REPORT FOR THE YEAR ENDING APRIL 27, 1907.

One active member has been added during the past year, making the total membership one honorary and twenty-one active members. Seven stated meetings have been held, with an attendance of 91, or 63 per cent., and twenty-two visitors. Three members have attended every meeting. Two assigned subjects have been discussed with interest. Six papers have been contributed by members, 28 cases shown, 49 cases reported, and 64 took part in discussions.

Resolutions were passed and forwarded to the Colorado General

Assembly, indorsing two bills: one for the construction and maintenance of an institution for the adult blind of Colorado, for industrial training; the other a bill for revision of the school laws for the purpose of securing the recognition and correction of physical defects in children.

On invitation of the Western Section of the American Laryngological, Rhinological and Otological Society, the Colorado Ophthalmological and the Colorado Otolaryngological societies met on Feb. 16, 1907, in joint session with the national society at the Denver Academy of Medicine. The ophthalmological papers by members of this society related to the connection between the eye and nose in certain pathological processes.

GEORGE F. LIBBY, *Secretary*.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting April 16, 1907.

DR. HOWARD F. HANSELL, Chairman, Presiding.

CASE REPORTS.

Drs. Wm. Campbell Posey and Frank C. Parker showed three cases:

(1) *A Case of Bitemporal Hemianopsia in an Apparently Healthy Person.*

The patient, a Hebrew salesman, aged 26 years, gave the history of a gradual diminution of sight in the left eye for three years past, and in the fellow-eye for two years. Glasses were worn one year before, but other than this no treatment had been administered. Several years previous to examination the patient had been in the habit of smoking from twenty-eight to thirty cigars per day, this number being reduced later to about ten to fifteen. Beer was used moderately. Specific history was denied. Other than the failing vision, dizziness at times was the only symptom complained of. The patient had ozena. The vision in the right eye was 6/xii and in the fellow-eye hand movements at 1/2 meter. External examination showed a promptly-acting pupil in the right eye, while that of the left was sluggish, although its consensual reaction was prompt. Internally the ophthalmoscope revealed a well-marked secondary optic atrophy in the left eye, with the right optic nerve similarly affected, though not to so great an extent.

The patient was referred to Dr. Spiller, who reported that there were no organic symptoms present. The field of vision in the right eye was limited to the nasal half, with contraction above and below for white, red and green. In the left eye the field showed a small area for white only, on the nasal side.

Treatment consisted of strychnin and potassium iodid in increasing doses, with a discontinuance of tobacco.

Four months after the first examination the vision in the right eye had improved to 6/vii.v and in the left to fingers at ½ meter, with a slight enlargement of the visual fields.

(2) *A Case of Cerebral Syphilis, showing Old Left Optic Atrophy and Palsy of All the Ocular Muscles of the Left Eye Except the Inferior Rectus, with Choked Disc in the Right Eye.*

A female, aged 20 years, presented herself with the following symptoms. Diplopia at 12 years of age, at which time the vision in the left eye was noticed to be failing, total blindness ensuing four years later. Dizziness, headache and uncertainty of gait, with periodic attacks of blindness during the past two years. O. D. V. 6/xii. O. S. V. *nil.*

Externally, in the primary position, O. S. showed convergent strabismus of 45 degrees, with ptosis; the eye was also directed somewhat downward and inward. All outward and upward motion was absent. Left pupil 4 mm. and irresponsive, whilst in the right eye the pupil measured 3 mm. and acted promptly. There was no palpable tumor and proptosis was absent.

The ophthalmoscope revealed in the right eye a red, swollen nerve, with edges obscured and blurred, the veins being tortuous. The left eye presented a chalky-white disc. There was a paralysis of all the muscles of the left eye except the inferior rectus. The field of the right eye was concentrically contracted, especially on the temporal side.

Ung. hydrarg. in dram doses, b. d., together with potass. iodid were prescribed.

Dr. Spiller reported a drooping in the right lower facial distribution, with hyperesthesia of the left side of the face and poor station. Further symptoms were absent. The case was regarded as one of cerebral syphilis, the condition in the left eye being attributable to an old lesion, probably in the apex of the left orbit, while the present choking of the disc with the involvement of the fifth and seventh nerves, together with the general symptoms, indicated a recent basal lesion, probably of a gummatous nature.

(3) *Palsy of the Right Inferior Rectus Muscle in an Hysterical Subject, with Grippe and Syphilis as Possible Causal Factors.*

A woman, aged 30 years, came with a history of sudden diplopia three days previously, attended with dizzy spells, falling about the house, and unsteadiness of gait. She had been sick in bed for one week with a cold and dated her trouble from that time. There was a history of one miscarriage, with four children living and three dead.

Ocular movements were good in all directions, except for a limitation in downward motion in O. D. O. D. V. = 6 vi; O. S. V. = 6 vi. The intraocular muscles were unaffected. When told to fix binocularly, the patient exhibited rather exaggerated symptoms of discomfort, giving the impression of an hysterical personality. Ophthalmoscopic examination was normal. The fields were normal, there being no reversal in outlines. Diplopia was obtained in lower field and to the right, pointing to palsy of the left superior oblique. There was no gross limitation of movement in either eye alone. Examination of the double images demonstrated palsy of the right inferior rectus muscle.

Examination by Dr. Spiller revealed no gross organic symptoms with the exception of the ocular palsy. The reflexes were generally increased and there was some tenderness in the inframammary regions and spine; there was also an exaggerated tendency to stagger. The case was viewed as one of hysteria, although it was thought that the ocular palsy had been caused either by grippe or syphilis.

Dr. George M. Gould read a paper entitled

THE REFRACTION CHANGES DEPENDENT UPON GLYCOSURIA.

He presented epitomes of the cases that have been reported, and added two unreported cases, one of Dr. Gould and one of Dr. Carpenter. He said that arranging the total 22 cases in three series we find the first composed of those in which myopia is increased by glycosuria (or decreased by its extinction) is made up of 6—those of Gould, Grimsdale, de Schweinitz's 2d, Appenzeller, Hirschberg, Dujardin.

The second series, those in which hyperopia is decreased by glycosuria (or increased by a return to normality) is made up of 8—those of Risley's 2, Carpenter, de Schweinitz's 1st, Neuberger's 2, Alexander, and Groenouw.

The third series, those in which hyperopia is reported as increased by glycosuria, is composed of 8—Doyne, Horner, Cohn, Landolt, Gallus, Lichtenstein, Sourdille, Lundsgaard.

The principles governing the determination of the refraction condition were set forth, the chief requirements being the accurate or static refraction before, during and after the glycosuria. Exclusion of reports according to the foregoing principles becomes easier when we notice that there is no reported case of myopia in which glycosuria has not had the effect of increasing the myopia—that is, of bringing the focus of the dioptric system forward. All such cases are logical, one may say, as naturally the effect of glycosuria must be to affect the focus in that way. Whatever be the mechanism intermediating the change, it is impossible to comprehend how glycosuria can displace the focus posteriorly. Now, as the myopia of an eye is far more easily and accurately measured than the hyperopia, and without a cycloplegic, it is not surprising that all observers, good or bad, unite, in their reports, that glycosuria, if it changes the refraction at all, increases the pre-existing myopia.

Confirming this result we find that the reports of eight cases of change in hyperopia also say that the effect of glycosuria is to advance the focus exactly as happens in myopia. And in this series occur the names of such trustworthy refractionists as Risley, Carpenter, de Schweinitz, etc.

It is simply inconceivable that the mere accident of the location of the retina in the path of the refracted cone of light rays should have the reverse effect in displacing the focus in hyperopia from what it does in myopia. Therefore, when eight reporters find such an illogical if not impossible reversal of the natural consequences as testified to by fourteen, it behooves us to doubt the accuracy of the oculists' tests and reports rather than to indulge a belief in the inherently improbable and impossible. Dr. Gould reviewed critically the cases of those reporting increase of hyperopia, and came to the conclusion that there need be no compunctions in excluding, on the ground of erroneous diagnosis due to failure to estimate correctly the static refraction, almost all of the cases so far reported in which it is claimed that glycosuria removes the focus of the dioptric system to a position posterior to that occupied in the previous non-glycosuric period.

As to the significance of the phenomenon, everybody has emphasized the importance of the recognition of the refraction and accommodation changes as warnings of the existence of the systemic disease. In the days of life-insurance examinations, of routine urinalyses by the general practitioner in almost all cases of ill-health, of the striking evidences to the patient of thirst, polyuria, etc., the warnings seem somewhat antiquarian, at least not of the first importance. The wideawake American oculist would prefer to doubly emphasize the overlooked truths: (1) That the eye-strain preceding the glycosuric refraction change may have been a prime factor in producing the functional dietetic and nutritional disease called glycosuria: most significant is the fact that the great majority of the cases occur during the presbyopic period. (2) That the secondary refraction change serves as a perfect illustration of the increase of the diseases due to overstrain by the proverbial vicious circle, increasing the irritation and nutritional abnormalism by the secondarily induced refractional changes caused by the glycosuria. (3) The necessity of preventing quick-following ocular disease, both functional and organic, by heeding the accurate warnings given by the refraction changes consequent upon early and curable glycosuria. But whatever the point of view, and whatever the injuries done or threatened, the accurate diagnosis of the static refraction overtops and conditions every measure of prevention and every step of progress either in science or in therapeutics.

Dr. William L. Pyle referred to a study of the literature of this subject made by him some five years ago, and incorporated in a paper on "Ocular Affections Associated with Glycosuria," read before the Philadelphia County Medical Society. He was struck by the vagueness of opinions and lack of agreement as to the cause of sudden hyperopia in cases of glycosuria. According to Landolt, it is due to change in the refractive index of the vitreous. Horner has suggested as a cause, dehydration of the vitreous body, with consequent decrease in the size of the eyeball. At a meeting of the Dutch Ophthalmic Society at Leyden in 1901, Van der Brugh called attention to the fact that increase of the refractive index of the nucleus of the crystalline increases the total refraction of the eyeball, while increased index of the cortex decreases the total refraction, thus offering a plausible explanation of why the refractive change in glycosuric cases may be either hyperopic or myopic in nature. Personally, Dr. Pyle agreed with the essayist that, in most of the cases of hyperopia reported, there was a paresis of accommodation, allowing a hitherto latent hyperopia to become manifest. He had noted that sudden and pronounced failure of accommodation was often the earliest ocular symptom of glycosuric intoxication. On the other hand, Koster has suggested that irritation of the ciliary nerves and spastic contraction of the ciliary muscle may cause a spurious myopia in these cases. Dujardin has noted a most striking instance, possibly of this kind, in a diabetic woman of 69, whose vision suddenly changed until a pair of + S. 4.00 lenses were discarded for reading. As the pupils resisted strong solutions of atropin, it was believed that spasm of the ciliary muscle was the causative factor rather than a physicochemic change in the crystalline.

Dr. Randall said that the explanation of the phenomenon was easy, vague only because multiform, even although it might seem a "blowing hot and cold with the same breath." We are all familiar with the increased refraction due to swelling of the lens in incipient cataract, which may antedate or even remain independent of any recognizable opacity; and the defective accommodation referred to is probably due to this rather than to any cycloplegia. On the other hand, reduction of the refraction would result from any increased index of the cortical layers of the lens, just as the nearly spherical lens of the infant is not excessively refracting for its short eye because nearly homogeneous. Increased refraction index of the vitreous would notably reduce the effect of the posterior curvature of the lens. So it is not necessary to assume error on the part of divergent observers nor to cite the manifesting in later life of the hypermetropia previously latent, as discussed in his paper, "Is There a Hypermetropia Acquisita?" (*Trans. Am. Ophth. Soc.*, 1899).

Comparison of the curves of refraction and of sugar in the urine as done by Landolt may seem to miss the mark, since it may not accord with the percentage in the ocular humors; but the matter is open to easy animal experimentation, as we can cause diabetes by puncturing in the rabbit and other animals, and merely soaking a frog's foot in sugar solution will give him diabetic cataract. The ophthalmometer must be used to get its data as to the curves of cornea and lens and the changes in the focal planes in man and the lower animals; while the chemical study of the ocular humors will probably reveal the exact causation of the phenomena.

Dr. Gould said, in closing, that the remarkably sudden changes in the refractive condition, upon the appearance of the glycosuria, which at times amounted to as much as 1 diopter in twenty-four hours, would seem to indicate that there was a change in the refraction index of the vitreous rather than in that of the lens. All the theories, however, were very uncertain, because of the vagueness in the reports of the facts. If these were better collected and the static refraction more carefully determined, it might be possible to find more satisfactory explanation for the phenomena.

Dr. Wm. G. Spiller read a paper upon

PARALYSIS OF UPWARD ASSOCIATED OCULAR MOVEMENTS (BLICKLÆHMUNG).

This form of paralysis of associated ocular movement was discussed in connection with reported cases and a number of hitherto unrecorded cases. One of the cases was with necropsy, and the findings support the author's conclusions expressed in his previous paper, viz.: that persistent paralysis of upward associated ocular movements is caused by a lesion near the oculomotor nuclei. The patient, a man aged 48 years (Sept. 22, 1904), had paralysis of upward associated movement with loss of convergence. Downward movement was possible, but was difficult. Lateral associated movements at this time were preserved. He had been very alcoholic. The speech was bulbar in character, and swallowing had become difficult. The saliva dribbled from the mouth. Ataxia of station was present. Headache was severe at one period. By Dec. 28, 1904, associated lateral and downward movements had become much affected. On Jan. 22, 1905, examination showed that mentality was poor, speech was more indistinct, deglutition was difficult, associated upward movements were lost, and all other associated ocular movements were much impaired. The associated lateral movements were more impaired than the lateral movements of each eyeball separately. The upper limbs were slightly ataxic. Gait was fair, but frequently when the patient attempted to sit down he would lose his balance and fall backward.

A minute tumor was found in the cerebral peduncles. Its lowest portion was seen where the fibers of the oculomotor nerves leave the nuclei in large bundles. It was in the right cerebral peduncle, and extended toward the aqueduct almost as far as the lowest part of the oculomotor nucleus, and some of the fibers of the right oculomotor nerve passed through it. As sections more anterior were examined, the tumor was seen to extend farther dorsally, until at a part where the oculomotor nuclei had disappeared the tumor extended dorsally a little beyond the aqueduct of Sylvius. The tumor here had its greatest development and was 1 mm. from the aqueduct. Its greatest diameter in any section was barely 2 mm., and its greatest length dorsoventrally was 5 mm. It extended forward very nearly to the beginning of the third ventricle. It had the appearance of an alveolar sarcoma or endothelioma.

Dr. de Schweinitz congratulated Dr. Spiller upon the satisfactory manner in which he had collected the data in order to demonstrate that a persisting paralysis of associated upward or downward movement indicated a lesion in the vicinity of the oculomotor nucleus, or, as he supposed it might be put, quoting from other authors, of the quadrigeminal region. He referred to Mr. Swanzy's statement that in those cases of tumor of the quadrigeminal bodies themselves, in which there had been loss of power of the upward or of the downward motion of the two eyeballs, this should be regarded as a distant symptom, and did not indicate that these bodies contained a center for the associated vertical movements, analogous to the center which almost certainly existed for the conjugate lateral motions in the sixth nerve nucleus.

The observation to which Dr. Spiller had referred, that in cases of deficient upward movement the eyeballs could usually be rotated farther if they were made to follow the uplifted finger than if the patients were simply told to move their eyes upward, was one which he could confirm from his own experience. In certain types of so-called hysterical muscular defects a somewhat similar condition of affairs was readily demonstrable. Dr. de Schweinitz quoted one of his own cases of pronounced hysteria in which the patient can not raise the eyes in the least above the horizontal level when directed to do so, although she is perfectly able, when her attention is directed momentarily away from the thought of upward rotation, to make this movement, or to make it when she is suddenly requested to look at an object above the horizontal meridian. The fact that these patients can move their eyes upward is also readily demonstrable with the aid of prisms.

Dr. Posey said that, in addition to the case referred to by Dr. Spiller, as having been observed by him, he had seen two others, both the result of apoplexy. The notes of the first of these, which had already been reported to the Section, were those of a woman, aged 65, in whom the apoplexy had, in addition, produced a right hemiplegia. The second case, which he had observed in the practice of Dr. Francine, was also a woman, past middle life, who had suffered an apoplexy, but without the production of other motor or sensory phenomena. As in his two other cases, the pupils did not react to light or accommodation, and convergence was lost. The loss in upward motion was the same in each eye. All other associated movements were conserved.

Although the first case had been observed ten years before, there had been no recovery of the power to move the eyes upward.

Dr. Zentmayer said, as he understood it, Dr. Spiller's view was that in paralysis of the associated upward movements of the eyes the lesion is in or near the nuclei of the third nerve, and he believed that such a case as he had reported wherein the recovery from such a condition the superior rectus on the one side had remained paralyzed for some days after recovery of the other muscles, substantiated this opinion. Snell has reported a similar case.

Dr. Gould referred to a patient who was able to turn either eye at will outward while fixing with the fellow, and was able to read test cards placed 90 degrees from each other, without altering the position of the diverging eyes. There was limitation also of the upward and downward movements and a slight deviation outward of one eye in ordinary fixation, for which operation had been proposed. He asked Dr. Spiller if he knew of an explanation for such a condition.

Dr. Spiller, in closing, said that a case such as Dr. Gould described would have no connection with those which he had reported, as he had purposely excluded all congenital conditions. The only interpretation, if the isolated movement of the eyeball was active and not passive, would seem to be that the individual was extraordinarily developed, and must have a cortical center which controlled the movement of one eye outward independently of the other eye. Such a condition had never been demonstrated.

KERATITIS DISCIFORMIS.

Dr. Zentmayer exhibited a case of keratitis disciformis occurring in a young man, 17 years of age. Following a slight traumatism a small focus of infiltration spread to the diameter of 3 mm. and a shallow hypopion formed. There was at present a round, disc-like opacity situated in the substantia propria of the cornea, scarcely visible by the unaided eye, but which by oblique illumination and the binocular loupe was resolved into pinpoint dots with a central area of about ½ mm. diameter, of brownish color. From this point the dots radiated to the periphery, which was composed of a dense, whitish rim ¼ mm. broad, the other margin of which was sharply defined from the surrounding clear corneal tissue. Dr. Zentmayer spoke of the differential diagnosis and stated that for the positive diagnosis of this condition the process should be followed from its incipiency through the inflammatory stage to the formation of the cicatrix.

EPITHELIOMA OF THE LOWER LID.

Dr. Zentmayer exhibited also a patient, 55 years of age, in whom an extensive epithelioma of the lower lid had been entirely healed by the local application of chlorate of potash. The treatment had extended over a period of ten weeks. The powdered potash had been rubbed into the floor and edges of the ulcer at first daily and subsequently every other day.

Dr. Pyle said that he had used chlorate of potash for epithelioma of the face for a number of years, and reported briefly two cases in which good results had been obtained by its use.

EDWARD A. SHUMWAY, *Clerk of Section.*

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

Dr. H. Manning Fish, of Chicago, sailed for Europe July 20.

Dr. Wendell Reber, of Philadelphia, sailed June 22 for Liverpool.

Dr. and Mrs. William M. Sweet, of Philadelphia, sailed for Europe July 4.

Dr. Demaria has been made professor of ophthalmology in the University of Buenos Ayres.

There is an epidemic of trachoma in Riverhead, N. Y., which is reported to be rapidly spreading.

Dr. L. Webster Fox sailed for Germany July 16 and will remain abroad until early in September.

Dr. C. E. Finlay was recently appointed professor of ophthalmology in the University of Havana, Cuba.

Dr. Cassius D. Wescott has been made a member of the consulting staff of the Lincoln Park Sanitarium.

Dr. Harry Friedenwald, of Baltimore, has been re-elected president of the American Federation of Zionists.

Dr. P. Bajardi has been appointed to the faculty of the University of Gênes as professor of ophthalmology.

Justice Llewellyn Barnes, of the Manhattan Eye and Ear Infirmary, died recently at the early age of 47 years.

Dr. H. Bert Ellis and Miss Florence Chandler, both of Los Angeles, Cal., were married May 20 in Philadelphia.

Dr. Walter G. Tucker, of Chicago, has gone to London, England, where he will engage in the practice of ophthalmology.

The Belgian Ophthalmological Society has made Theodor Leber, Julius Hirschberg and Herzog Karl Theodor honorary members.

Mr. H. R. Swanzy, of Dublin, Ireland, was knighted at the recent celebration of the birthday of King Edward VII of England.

The optometry bill introduced into the New York legislature met with much opposition and the governor reserved final decision upon the bill.

Dr. Fleming Carrow, Detroit, Mich., has been appointed to the State Board of Registration. He succeeds Dr. Walter Sawyer, of Hillsdale, Mich.

Professor Sattler, who gave the Bowman lecture of the Ophthalmological Society of the United Kingdom recently, has been made an honorary member of the society.

Dr. Tatham Thompson, who has been on the attending staff of the Cardiff Infirmary as ophthalmic surgeon for twenty years, was recently appointed consulting ophthalmic surgeon.

In the amalgamation of several separate colleges with the Marquette University, Dr. H. V. Würdemann, of Milwaukee, has been elected professor of ophthalmology to the university.

After a competitive examination Dr. J. Wilson Ramsey, of Aledo, Ill., received the appointment of resident physician at the Illinois Charitable Eye and Ear Infirmary, Chicago.

Mr. J. H. Parsons, of London, England, has been awarded the Nettleship gold medal of the Ophthalmological Society of the United Kingdom for his book, "The Pathology of the Eye."

The Bradford Eye and Ear Hospital, in England, has had its name changed to The Royal Eye and Ear Hospital through the activity and influence of Dr. Adolph Bronner, one of its staff.

A Belgian oculist named Bribosia, residing at Namar on the French border, was recently fined for practicing in France and the fact was ordered published at the expense of the defendant in several lay papers.

The Transactions of the Ophthalmological Society of the United Kingdom will now appear thrice yearly, instead of once as formerly. Members will be given their choice of receiving the three parts as they appear or the whole volume at the end of the year.

Dr. Uribe y Troncoso, a well-known ophthalmologist of the City of Mexico, visited Chicago recently on his way to Europe, where he will make a study of school hygiene and construction, especially with regard to the eyes, in the interests of the Mexican government.

The Territorial Board of Immigration of Hawaii has been trying the plan of treating in quarantine the trachoma cases found among immigrants, and reports that the plan has succeeded so well that only a very small percentage of immigrants require deportation.

The Department of Health of New York City has been requested by the Board of Education to go thoroughly into the question of the eyes of school children. It has been estimated that 36,000 children now need glasses, but that number is probably much below the actual number which a thorough examination by competent oculists would show.

Miss Minnie E. Hicks, of Galena, Maryland, recently won the gold bracelet, first prize for the best poem on Maryland offered by the Jamestown Baltimore Committee. Miss Hicks has some startling views upon the subject of the blind, one of which is that particularly the very ignorant blind should either be educated or chloroformed, especially if they have become blind in adult life.

Dr. Richard Henry Derby, a well-known ophthalmologist of New York City, died July 4 at Litchfield, Conn., at the age of 63 years. Dr. Derby was surgeon to the New York Eye and Ear Infirmary, consulting ophthalmologist to the Ophthalmological Hospital, New York Orthopedic Hospital and the Trinity Hospital. He was also a member of the State Charities Aid Association and a trustee of the New York Institution for the Blind.

A wise charity is that dispensed by a well-known Scotch manufacturer, Mr. James Coats. He recently established many small useful libraries in the smaller towns of the Highlands and adds to them from time to time fresh donations of recent literature. And in order that his libraries may be of greater benefit he sends a skilled oculist through the country to examine those having defective vision, and to supply the necessary glasses free of charge. Five hundred pairs of glasses were thus distributed recently.

A Disclaimer.—The following appears in the *Ophthalmoscope* for July: "Dr. Ernest E. Maddox, of Bournemouth, England, having seen a circular which he feels confident his colleagues would know to be foreign to his wish, asks us to state that he has lost control over any mode in which his little book on the ocular muscles may be published or advertised on the other side of the Atlantic (America). Dr. Maddox (who has our entire sympathy) tells us that the book in question was sold outright by the English publishers five years ago, when he last revised it."

OHIO STATE MEDICAL ASSOCIATION.—The second annual meeting of the Eye, Ear, Nose and Throat Section of the Ohio State Medical Association will be held August 28 and 29 at Cedar Point, Ohio, a famous summer resort on Lake Erie. The first day, Wednesday, will be devoted to papers on the eye. Wednesday evening at 8 p. m. Dr. John E. Weeks, of New York City, will give an address on the "Interdependence of Diseases of the Eye, Ear, Nose and Throat." The address will be followed by a social session. Thursday will be devoted to papers on the ear, nose and throat, the morning being taken up by a symposium, for the general profession, on "Acute Inflammation of the Ear in Which Pain Is the Prominent Symptom." A full program has been very carefully arranged and a large attendance is expected.

THE meeting of the Heidelberg Ophthalmological Society will be held on August 5, 6 and 7. The program is as follows: Sunday, Aug. 4, at 6 p. m., meeting at Professor Leber's home; 8 p. m., informal assembly in the Stadtgarten. Monday, Aug. 5, 9 a. m., first scientific meeting at the University; 2:30 p. m., demonstrations in the Institute of Physiology of the University; 6 p. m., banquet in Stadthalle. Tuesday, Aug. 6, 9 a. m., second scientific meeting at the University; 12 m., assembly of members; 3 p. m., second demonstration meeting; 4:30 p. m., excursion with supper. Wednesday, Aug. 7, 9 a. m., third scientific meeting at the University. Those who wish to show microscopical preparations should notify Prof. v. Hippel in Heidelberg of the number of microscopes and the strength of objectives required, etc., before the end of July.

PROF. A. WAGENMANN, *Secretary*, Jena.

LIST of papers to be read at the meeting of the American Academy of Ophthalmology and Otolaryngology, Louisville, Sept. 26 to 28, 1907.

OPHTHALMOLOGIC SECTION.

Address, Eye Symptoms of Intracranial Complications of Otitic Origin, Dr. R. A. Reeve, Vice-president, Toronto, Canada.

1. Ocular Symptoms in Intracranial Complications of Otitic Disease, Dr. Percy Fridenberg, New York City.

2. Insufficient Pigmentation as a Cause of Eye Diseases, Dr. Charles E. Woodruff, Plattsburg, N. Y.

3. An Inquiry into the Refractive and Pathological Conditions of the Eyes of Old Soldiers, with Reference to the Frequency and Kind of Diseases to which they are subject, with Special Reference to the Relation of These to Cataract, Dr. D. W. Greene, Dayton, Ohio.

4. The Treatment of Incipient Senile Cataract, Dr. L. A. W. Alleman, Brooklyn, N. Y.

5. Angiosclerosis of the Eye, Dr. Robert Scott Lamb, Washington, D. C.

6. Glaucoma After Cataract Extraction, Dr. Albert E. Bulson, Fort Wayne, Ind.

7. Magnetic and Non-magnetic Properties of Iron Alloys, Dr. Mortimer Frank, Chicago.

8. A Further Study of the Horopter, Dr. George C. Savage, Nashville, Tenn.

9. Defects of Abduction Associated with Retraction of the Globe in Adduction, Dr. John Green, St. Louis, Mo.

10. Advancement Versus Tenotomy, Dr. C. Barck, St. Louis, Mo.

11. The Relative Importance of the Fitting of Glasses in Ophthalmic Practice, Dr. Linn Emerson, Orange, N. J.

12. Methods of Illuminating Test-type Charts, Dr. Nelson M. Black, Milwaukee, Wis.

13. Treatment of Partial Optic and Retinal Atrophy by Electricity and Massage, Dr. H. V. Würdemann, Milwaukee, Wis.

14. Remarks on Vibratory Massage in Eye Diseases, Dr. Leartus Connor, Detroit, Mich.

15. Can a Substitute for Simple Enucleation Be Employed in Every Instance? Dr. George F. Suker, Chicago.

16. Glioma Retinæ, with Report of a Binocular Case Cured, Dr. Charles Lukens, Toledo, Ohio.

17. Dilatator Pupillæ, Dr. Adolf Alt, St. Louis, Mo.

18. Corneal Lesions Dependent on Accessory Sinus Diseases, Dr. H. Manning Fish, Chicago.

19. Some Experience with Simple Glaucoma, with Conclusions Therefrom on the Relative Value of Operative and Non-operative Treatment, Dr. H. B. Young, Burlington, Iowa.

20. Ocular Manifestations of Nephritis, Dr. J. O. McReynolds, Dallas, Texas.

21. A Study of Refraction Based on Four Thousand Cases, Dr. J. F. Byington, Battle Creek, Mich.

MILTON ON HIS BLINDNESS.—A friend of THE RECORD has sent us a copy of "The Prose Works of John Milton," by Robert Fletcher, London, 1835, that contains the celebrated letter of the blind poet to his friend, Leonard Philara, the Athenian, in which, among other topics, he describes the symptoms of his disease (probably chronic glaucoma) that eventually terminated in complete loss of sight. Elsewhere, as is well known, he refers to his disease as the "drop serene" (*gutta serena*), one of the terms by which then, as now, we are accustomed to hide our ignorance of the pathology of an affection by labeling it with one of its signs or symptoms. One can not help admiring the courage of this remarkable man, as especially indicated by the closing sentence of his letter—a sentence that recalls a few lines of his sonnet:

"Doth God exact day labour, light denied?
I fondly ask; but Patience, to prevent
That murmur, soon replies.

* * * * * * * * * *

They also serve who only stand and wait."

"Though I was known to you only by my writings, and we were removed to such a distance from each other, you most courteously address me by letter; and when you unexpectedly came to London, and saw me who could no longer see, my affliction, which causes none to regard me with greater admiration, and perhaps many even with feelings of contempt, excited your tenderest sympathy and concern. You would not suffer me to abandon the hope of recovering my sight, and informed me that you had an intimate friend at Paris, Doctor Thevenot, who was particularly celebrated in disorders of the eyes, whom you would consult about mine, if I would enable you to lay before him the causes and symptoms of the complaint. I will do what you desire, lest I should seem to reject that aid which perhaps may be offered me by heaven. It is now, I think, about ten years since I perceived my vision to grow weak and dull; and, at the same time, I was troubled with pain in my kidneys and bowels, accompanied with flatulency. In the morning, if I began to read, as was my custom, my eyes instantly ached intensely, but were refreshed after a little corporeal exercise. The candle which I looked at seemed as if it were encircled with a rainbow. Not long after the sight in the left part of the eye (which I lost some years before the other) became quite obscured, and prevented me from discerning any object on that side. The sight in my other eye has now been gradually and sensibly vanishing away for about three years; some months before it had entirely perished, though I stood motionless, everything which I looked at seemed in motion to and fro. A stiff, cloudy vapour seemed to have settled on my forehead and temples, which usually occasions a sort of somnolent pressure upon my eyes, and particularly from dinner till the evening. So that I often recollect what is said of the poet Phineas in the Argonautics:

> A stupor deep his cloudy temples bound,
> And when he walk'd he seem'd as whirling round,
> Or in a feeble transe he speechless lay.

I ought not to omit that, while I had any sight left, as soon as I lay down on my bed and turned on either side, a flood of light used to gush from my closed eyelids. Then, as my sight became daily more impaired, the colours became more faint, and were emitted with a certain inward crackling sound; but at present every species of illumination being, as it were, extinguished, there is diffused around me nothing but darkness, or darkness mingled and streaked with an ashy brown. Yet the darkness in which I am perpetually immersed seems always, both by day and night, to approach nearer to white than black, and when the eye is rolling in its socket it admits a little particle of light as through a chink. And though your physician may kindle a small ray of hope, yet I make up my mind to the malady as quite incurable, and I often reflect that, as the wise man admonishes, days of darkness are destined to each of us; the darkness which I experience, less oppressive than that of the tomb, is, owing to the singular goodness of the Deity, passed amid the pursuits of literature and the cheering salutations of friendships. But if, as is written, man shall not live by bread alone, but by every word that proceedeth from the mouth of God, why may not any one acquiesce in the privation of his sight, when God has so amply furnished his mind and his conscience with eyes. While He so tenderly provides for me, while He so graciously leads me by the hand and conducts me on the way, I will, since it is His pleasure, rather rejoice than repine at being blind. And, my dear Philara, whatever may be the event, I wish you adieu with no less courage and composure than if I had the eyes of a lynx."

THE
OPHTHALMIC RECORD
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Original Articles.

EXTENSIVE DISEASE OF THE RETINAL VESSELS (VASCULITIS AND PERI-VASCULITIS) FOLLOWED BY PROLIFERATING RETINITIS IN A YOUNG COLORED MAN.*

G. E. DE SCHWEINITZ, M.D.
PHILADELPHIA.

With Results of Skiagraphic Examination of the Head.

HOWARD PANCOAST, M.D.
PHILADELPHIA.

(Illustrated.)

The eyes of the patient, whose clinical history and ocular examination follow, presented in such elaborate degree the lesions of disease of the retinal blood vessels, retinal hemorrhages and later hemorrhages into the vitreous and so-called proliferating retinitis with the formation of vascular veils, that their record is justified, especially as a study of the lesions in the naso-pharynx and of the accessory sinuses by means of the *x*-rays furnishes suggestions as to possible etiologic relationships which are not without interest.

George Murray, aged 23, born in the United States, single, colored, bellman, applied for treatment in the Dispensary for Diseases of the Eye of the University Hospital on Sept. 7, 1905, and again, after a short period of treatment, one year later, namely, on Sept. 13, 1906.

Family History.—The patient's maternal grandmother is said to have lived to be 100 years old; his mother's sister died of phthisis; his father is living and well; his mother died at the age of 53 from paralysis, and prior to her death had some form of abdominal tumor, the nature of which is not known. One sister is alive and well; another sister is subject to so-called sinking spells, which from their description indicate that she has epilepsy; a third sister died of diabetes at the age of 14.

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* Read at the meeting of the American Ophthalmological Society, at Washington, D. C., May 7, 1907.

Patient's History.—In childhood the patient had measles and whooping cough. Eight years ago he suffered from a moderately severe attack of influenza which lasted three weeks. He has never had rheumatism, but as a boy caught cold readily, although in later years he has outgrown this tendency. He never had bone, joint or glandular disease during childhood, nor pulmonary or gastrointestinal affections in later years. When about 6 years old he was thrown from a sled, striking his forehead on a step, and was unconscious for half an hour. When twelve years old he fell and injured the right side of his chin. A third fall occurred twelve years ago, by which he sustained an injury in the occipital region, and again, four years later, he fell on the ice and struck his head on the same place. These four accidents have never given rise to any symptoms except those which surrounded their immediate occurrence. The patient has never used tobacco. Prior to the time that his ocular treatment was instituted he averaged a few glasses of beer a week and an occasional glass of whiskey. In 1893 he had gonorrhea, which lasted one month and of which there has been no return and of which there are no apparent sequels. Syphilis is denied, and there are no evidences on his person of this infection. The ordinary stigmata of inherited syphilis are absent.

Past Ocular History.—Five years ago the patient was struck in the right eye by a crust of bread. Following this there was a moderate traumatic conjunctivitis, which lasted about three weeks and which was accompanied by pain and moderate discharge, but was unassociated with any failure in vision. On Sept. 7, 1905, he came to the dispensary for the relief of fronto-occipital headache. The vision of the right eye was 6/5 and of the left eye 6/15. After the use of atropin the following glass was prescribed:

O. D. + .50s ⌓ + .25c axis 105, 6/5.
O. S. + .50s ⌓ + .50c axis 75, 6/7.5.

The ophthalmoscopic record is: Media clear; discs moderately vertically oval; refraction hyperopia. There is no note of any lesion in the fundus of either eye.

The patient was not again seen until one year later, namely, on Sept. 13, 1906, when the vision of the right eye was 6/15 and of the left eye 6/6. He sought relief from the sensation of a foreign body in the right eye which had lasted for about two months. The bulbar conjunctiva was hyperemic, and there were moderate peri-

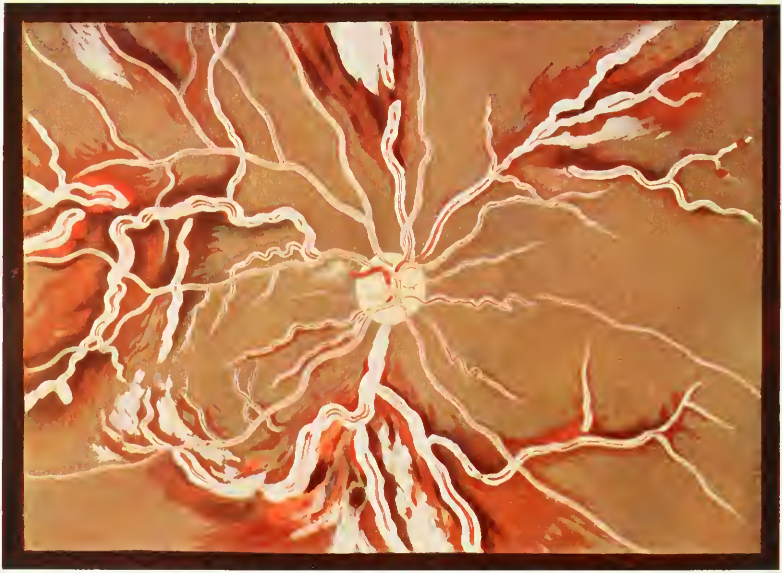


Fig. 1. Extensive retinal vessel disease, periarteritis and periphlebitis. Right eye.

corneal and conjunctival injection and a small marginal corneal ulcer on the nasal side of the right cornea, for which boric acid and atropin drops were ordered. It was also noted that this eye was more prominent than the left. The development of a slight iridocylitis, associated with the small marginal ulcer, led to a more thorough examination on Sept. 27, 1906, than had previously been made, with the following results:

Ocular and General Examination Sept. 27, 1906.—Vision of O. D. 6/7.5; eye prominent as compared with the fellow eye, but no limitation of movement in any direction, and no diplopia; cornea slightly hazy in the neighborhood of the small corneal ulcer; a delicate band of ciliary injection, but pupil widely dilated and no synechiæ. The lens and the vitreous were clear, and the ophthalmoscope revealed the following conditions:

The optic disc was nearly round and had a small central excavation. The veins were swollen, uneven and thickly coated with white tissue (periphlebitis). Between the branches of the upper and lower temporal veins and the upper nasal vein were extensive sheet-like hemorrhages and some areas of white exudate. The arteries in comparison with the veins were small and were also lined with white tissue indicating the infiltration of their walls (Fig. 1).

Examination of the left eye showed a precisely similar, although less marked, condition of affairs—widespread disease of the vessels, with hemorrhages and exudates along their distribution.

The patient was referred to the Medical Dispensary for general examination, and the following report obtained: "Nothing has developed in the physical examination of George Murray to account for his ocular condition. Urine examination revealed no indications of kidney disease."

The patient was admitted to the wards of the University Hospital and thoroughly examined, without finding any constitutional disease. Urine and blood examinations, frequently repeated, yielded entirely normal findings. The blood pressure was normal. Not the slightest improvement took place after a thorough mercurial and iodid course; indeed, the patient was most susceptible to the influence of mercury and was quickly salivated, and at the expiration of two weeks the hemorrhages had greatly increased, so that vision of O. D. was reduced to hand movements and of O. S. to 6/150; also a fine punctate haze developed throughout the right vitreous.

Nov. 15, 1906.—Marked cyclitis of the right eye was evident, with soft synechiæ readily broken loose with atropin. Exophthalmos of the right eye was distinct.

The patient was referred to Dr. W. G. B. Harland for investigation of the rhino-pharynx, who submitted the following report: "An examination of the nose of George Murray showed some enlargement of the turbinates, especially of the lower turbinate on the right side. The lining mucous membrane of the nose was of a darker red than normal, due to chronic congestion. In the vault of the pharynx was discovered a large mass of adenoid tissue, not fibrous and pale with marked longitudinal furrows as is usually found, but soft with an even surface of a dusky red hue, due to chronic congestion. The faucial tonsils were very large and fibrous. The surface of the right one was traversed by dilated blood vessels. The pharyngeal and faucial tonsils were removed under cocain without difficulty, one at a sitting, bleeding being rather free."

At my request Dr. Howard Pancoast made a stereoscopic skiagraphic examination of the patient's head, with the following results: "The most prominent feature revealed by the *x*-ray examination is the abnormal development of the accessory sinuses of the respiratory passages. The frontal sinuses are enormous, and extend the entire width of the frontal region and well around into the temporal fossæ. Bony partitions are apparently lacking, and the walls are abnormally thin, particularly for a negro.

"The sphenoidal and the ethmoidal sinuses are similarly affected, the chambers appearing greatly enlarged, and the walls thin, except the anterior and inferior wall, which apparently is decidedly thickened. Bony partitions are evidently present, but so thin as to make it appear that these two sets of sinuses merge one into the other" (Fig. 2).

In December, in the center of the right cornea, a small, disc-like infiltrate formed, somewhat resembling that which is seen in keratitis disciformis, associated with increase of the cyclitis and the exophthalmos. These conditions were greatly relieved by the removal by Dr. Harland of the thick mass of adenoid tissue which has previously been described; but the retinal lesions remained unchanged.

From now on until February, 1907, there was a gradual increase in the hemorrhages and exudates, particularly upon the right side, and large, glistening, white veils began to push their way into the vitreous; in other words, the lesions of proliferating retinitis began to be evident.

In March the vision of the right eye was reduced to counting fingers at one foot, and that of the left to 2/45. Well-marked proliferating retinitis and the formation of large, vessel-bearing

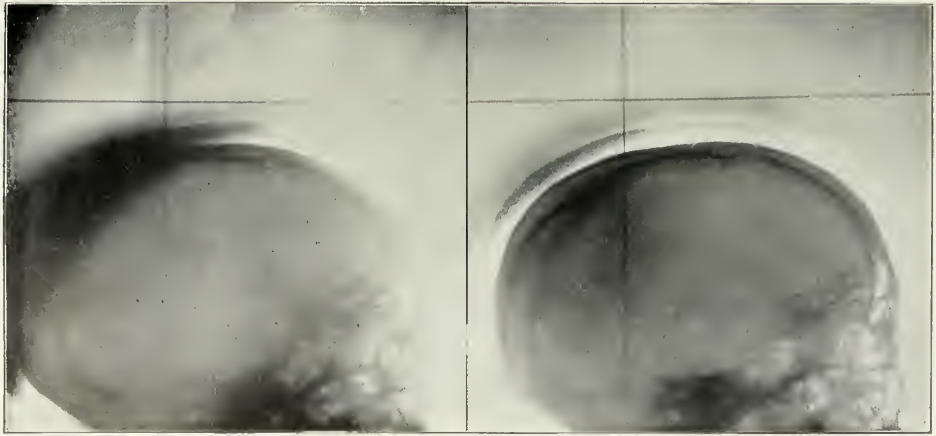


Fig. 2. Stereoscopic skiagrams showing the thickening of the anterior wall of the sphenoid sinus and enlargement of the frontal sinuses. For description see text.

masses of white tissue pressing forward into the vitreous were marked features.

On April 29 the following notes were made: Vision of O. D. hand movements. There is a small, central corneal scar, marking the position of the former disc-like infiltrate. Upon the surface of the lens are several clumps of iris pigment, but the pupil is widely dilated and there are no synechiæ. The vitreous is cloudy and the disc can not be seen. From in front and above the position of the disc and passing upward and forward, there is a large veil of bluish-white tissue carrying upon its surface congeries of twisted vessels, the surface of which can be studied with + 23 D. Just below the disc there is a reddish mass indicating the presence of a hemorrhage, and also a larger, similar blood-carrying veil. On the nasal side there are large, sheet-like veils carrying similar twisted vessels and pressing forward + 17 D. into the vitreous. Passing from the top to the bottom of the eyeground on the nasal side there is a falciform stripe of glistening tissue somewhat in advance of the veils just described. Partial detachment of the retina is evident (Fig. 3). Vision of O. S. 2 150; cornea clear; no synechiæ; no pigment on lens. Beginning at a point approximately corresponding to the disc and occupying an extensive area of somewhat triangular shape, passing outward and downward, is a huge mass of whitish connective tissue supporting congeries of vessels and numerous smaller and larger hemorrhages. It is bounded above by a glistening band of tissue midway between the disc and the periphery, best studied with + 9 D., which joins on its nasal end with a similar smaller band passing upward and inward, and also with a band of like tissue which bounds the lower portion of the mass and which moves gradually around to meet the upper margin of the lesion. In the lower and inner portion of the eyeground and also carrying numerous twisted vessels are large, glistening, white masses, elevated + 9 D., and just to the nasal side of the disc and below are numerous sheet-like hemorrhages and large, glistening veils which extend to the periphery of the eyeground; in fact, the only portion of the retina which seems at all free exists upward and inward.

A slight prominence of the right eye continues, but there are no faults in movement except imperfect convergence, and no failure in the correlation of the movements of the eyelids and the eyeball.

A second residence in the hospital for a few days during the month prior to the time of the record of the notes just given, and during which all examinations that had previously been made were repeated, failed entirely to reveal any physical disabilities other than those connected with the eye. A scar on the forehead beginning slightly to the right of the median line and sloping downward and to the left to one-fourth of an inch above the inner end of the left eyebrow indicates the position of the wound received when a child previously described, as does also a scar one and one-half inches long on the right side of the chin. In other respects no external lesions were discoverable.

Remarks.—Although the clinical history and repeated examinations failed to prove that this patient was the subject of syphilis, either acquired or inherited, this taint, which is also not positively excluded, would best explain the extensive disease of the retinal vessels. Syphilitic arteritis and perivasculitis of the retina are well-known conditions and a visible opacity of the walls of the arteries and more rarely of the veins, so that the blood columns of the diseased vessels are accompanied with lateral white lines or covered with grayish-white opacities, or even at times completely obliterated, to quote the words of Haab, represents a familiar disease picture.

It is notable in the present case that, while the arteries were extensively diseased, the veins are even more notably involved, so that there is an elaborate periphlebitis. Such periphlebitis has more than once been described as the result of inherited syphilis, and in general terms perivasculitis of the retina as a late manifestation of the disease is well known. Microscopic investigations under these conditions are well summarized by Parsons, and we know that the arteries are thickened, sometimes hyalin, and surrounded with deeply staining groups of cells, but, as Uhthoff has shown, not only is such infiltration found in the arterial twigs, but also in the veins, and in some of his cases the aggregation of cells was so great that the lumen was invisible. Appel also has described endo- and peri-arteritis and infiltration of the coats of the veins, together with obliteration of the capillaries.

New vessel formation and the so-called retinitis proliferans take place more frequently after hemorrhages of syphilitic origin than those which are due to other causes, not only when the syphilis is an acquired infection, but when it is hereditary. It must be remembered, however, that in the present case antisyphilitic remedies were badly borne and salivation was induced by doses of mercury which ordinarily would not produce this effect in a syphilitic subject. At best the etiologic factor is a matter of speculation, with the indications more strongly in favor of syphilis, in spite of the failure to prove its presence by clinical history, repeated examinations or the therapeutic test, than of other cause of such a condition.

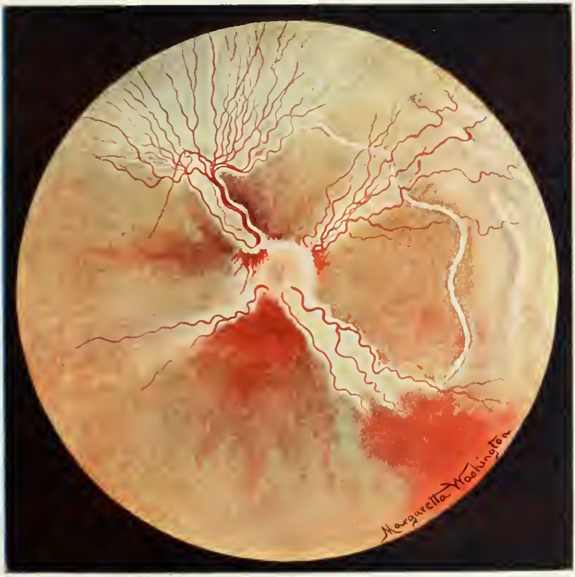


Fig. 3. Retinitis proliferans, with new vessel formation; beginning detachment of the retina. Right eye.

In that affection usually seen in young persons, commonly young men between the ages of 15 and 30, to which the name relapsing hemorrhage or spontaneous hemorrhage into the vitreous has been given, and for which the cause is not definitely known, Ammann and others have noted disease of the vessels. Some of these patients, as Eales has pointed out, are liable to constipation, irregularity of the circulation and repeated epistaxis, and in some gout has been believed to be a cause; in others hereditary and acquired syphilis. In some respects this case is allied to those which have just been described, although in the extensive development of the retinal vessel disease and the elaborate proliferating retinitis it assumes a position quite apart from any others which I have had the opportunity of studying in a patient of this age and race.

Very interesting, it seems to me, are the results obtained by the *x*-ray examinations already described. Commenting on these studies Dr. Harland, who has given particular attention to the value of this method of investigation in sinus disease, writes me as follows: "A study of the skiagraphs shows the presence of very large frontal and sphenoidal sinuses and the separation of the ethmoidal cells by exceedingly thin walls. The antra and other sinuses appear clear. The walls separating the sphenoid sinuses from the nasal fossæ and the naso-pharynx appear greatly thickened in both of the pictures taken before and after the removal of the adenoid mass. Probably this increase in thickness is due to new bone formation from the congestion caused by the proximity of the large vascular adenoids, leading to hypernutrition. Bone hypertrophy shown in the inferior and anterior walls of the sphenoid is not found within the ethmoid labyrinth, for there the bony septa are thinner than usual, suggesting a rarefying osteitis. Very likely this process has so thinned the walls as to make the sphenoid and some of the posterior ethmoidal cells appear as one cavity in the picture. In proof of this view, close scrutiny of the skiagraphs shows the outer ends of such a partition in the front part of the sphenoid sinus. There are no positive signs in the nose to indicate the primary cause of these changes unless they are due to syphilis. They can not be explained by local nasal disease."

Dr. Pancoast writes as follows: "While the skiagraphs give no positive indication that the enormous development of the sinuses was a factor in the causation of this patient's symptoms, the value of stereoscopic skiagraphic examination is demonstrated in two ways: In the first place it renders possible the exact location and configuration of the entire osseous structure of this portion of the head. In the second place, it demonstrates the possibility and, in fact, the probability of errors in localization and also in diagnosis which may result from an attempt to interpret skiagraphs made in the usual way. For example, comparative examinations of one of the negatives from each of the two sets, one made before and the other after the operation for the removal of the adenoids, gave an impression that the anterior and inferior wall of the sphenoidal sinus was thickened in the first place, but appeared much thinner in the second. This observation apparently indicated that the thicker shadow in the first place was due to the presence of the adenoid. The stereoscopic views, however, show that this bony wall is of the same thickness in each instance, and thicker, moreover, than it appears in the skull of a normal individual."

A matter of some interest is the prompt subsidence of the active iridocyclitis, as well as a certain lessening of the exophthalmos which followed the removal of the adenoid mass. In this connection Dr. Shumway called my attention to the observations of Krauss on the relations of the orbit to the pterygo-palatin fossa and his belief that at times most of the venous blood from the globe may pass through the inferior orbital fissure, and that this fossa and fissure may contribute the connecting link between-disturbances of the naso-pharynx and those of the orbit. Vascular swellings situated in the pterygo-palatin fossa and secondarily invading the orbit may cause pulsation of the eyeball, exophthalmos, etc. It is possible, therefore, as Dr. Shumway has suggested to me, that the obstruction of the pharynx by the adenoid tissue in this patient might by interference with the lymphatics and venous currents be responsible for some of the symptoms. This idea receives a certain amount of confirmation by reason of the rapid subsidence of the inflammatory symptoms and the lessening of the exophthalmos on the removal of the adenoid mass. It did not, however, influence in any way the retinal lesions.

CONGENITAL COLOBOMA OF THE UPPER LID WITH SYMBLEPHARON.

David Coggin, M.D.

SALEM, MASS.

Helen W., of robust Irish parentage, was born on the 19th of October, 1901. Labor normal. The *left* eye was closed at birth, and it so remained when first seen by me two days later. Coloboma at the outer third of the *right* upper lid, with a complete symblepharon. Marked depression of the right frontal bone, with apparent arrest of development of the superior maxillary and malar bones. Fontanels closed. Probable absence of cartilage and of eye lashes, extending from the coloboma inwards.

External to the coloboma the lid was tilted upwards in a state of marked ectropium, but it was normal so far as cartilage and cilia were concerned. Eye of normal size and the cornea was intact. Negative history as to any analogous hereditary trouble.

There were two older lusty children. Unsuccessful attempts were made to keep the exposed cornea covered by means of adhesive plaster and also of collodion; so castor oil was ordered to be dropped on the cornea. The edges of the coloboma were refreshed and sutured so that the upturned third of the lid was brought down into place, thus helping to partially cover the exposed cornea, the center of which had already become cloudy and which indicated the site of the dense leucoma that eventually followed.

Though the mother had not noticed any antecedent vaginal discharge, the infant had a marked ophthalmia, which appeared first in the left eye, but which soon subsided on applying silver nitrate.

An attempt was made later to pass a probe between the upper lid and the eyeball, but the symblepharon seemed to extend upward for at least 5 or 6 mm.

In the *Annales d'Oculistique*, November, 1901, Dr. Morax reported an almost analogous case, in which he had operated successfully on a baby, aged 2 months.

For this little patient, because of the symblepharon, it seemed as if conjunctival grafts must be made and, possibly, followed by an iridectomy. Not caring to undertake to do a plastic operation of this sort, I referred the baby to an institution where a surgeon of repute refreshed the lid margins, leaving a central opening, and deferring a further operation till the patient should be older.

When the girl was recently seen, the right frontal bone was less depressed than it was in 1901 and the sides of the face were more symmetrical. The eyeball seemed to have developed with its fellow, and the cornea, as seen through the aperture and the lids, appeared clear.

The child attends school and is a bright scholar.

In view of the fact that there are not many published records of this malformation, this brief history of a single case is here offered.

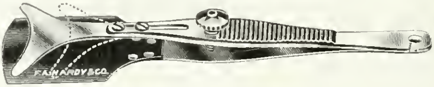
SELF-RETAINING LID PLATE.

Nelson M. Black, M.D.

MILWAUKEE, WIS.

(Illustrated.)

The ordinary lid plate, while practically indispensable in most of the plastic operations upon the lids, at the present time is by no means a satisfactory part of the armamentarium of the ophthalmic surgeon. The lid must be held in position over the plate by the thumb or by a piece of silk passed through the lid margin, and it is almost impossible to make incisions in the loose tissue accurately with so unstable an instrument. To overcome this the writer devised a forceps, the lower blade of which is somewhat wider than the average lid plate at the distal end. The upper blade, composed of two parts, is curved at the distal end to correspond to the curve of the lid margin; this curved end is movable in the long axis of the instrument so as to be adjusted for a deep or shallow cul-de-sac. The upper blade is attached to the lower blade by an aseptic lock and a small screw brings the two blades in contact.



The original instrument, made by F. A. Hardy & Co., had the distal end of the lower blade made of vulcanized rubber, but this is unnecessary and does not permit of the instrument being boiled. It has aided greatly in ptosis operations, especially in making the incisions in Tansley's modification of the Panas and von Graefe operation where the accuracy of the initial incisions is important.

Dr. Frank Allport's suggestion of thoroughly scarifying the skin surface of the tongue flap by criss-cross incisions and then removing most of the dermal epithelium is of material aid in this method of operating.

128 Wisconsin Street.

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Editorial.

"OPTOMETRY" LEGISLATION.

There seems to be an organized effort upon the part of opticians throughout the country to secure legislation licensing them to practice "optometry." Bills have been introduced in various states and passed in some. Is it not time that we offer a dignified, intelligent and concerted opposition to these measures, and, if so, how shall we go about it?

WHAT THE OPTICIANS WANT

is, first and foremost, state recognition of refraction or "optometry" as a profession apart from medicine. All of the demands of previous years for the use of cycloplegics in New York and the title of Doctor of Optometry in Illinois have given way to this one, and at last the issue is clear cut. Is optometry the practice of medicine or is it not? We must meet this issue squarely. There are reasons enough why it is. Experience shows that real reasons presented at the proper time and in the proper way by the proper men appeal strongly enough. Few legislators would ignore a letter from the family physician, enclosing and endorsing the protest of the ophthalmological society, the city medical society and the state society, but this protest must be strong and loud. There must be no perfunctory acquiescence; get all the legislative committees to work; supply them with mimeograph copies of your reasons; get hold of the family physician of every member of the committee for whom the bill will be debated; get all the letters to the committeemen together (undated) and mail them at the right time; go before this committee in person, fight it through the committee, unto the floor of the House, into the other House, and up to the last reading, and then before the Governor. Defeat the bill, if you can honorably, and, lastly, be prepared to fight the same bill in the same way two years later.

This means a good deal of work—perhaps it is not worth while;

however, we must make up our minds one way or the other at this time. The object of this article is only to call attention to the facts. If a campaign is to be made, it must be well organized or else it will fail. I append some of the reasons which have been successfully advanced to defeat the bills in New York, Illinois and Iowa, and also Governor Deneen's most commendable veto of the measure which passed the Illinois Legislature this year.

Honorable Sir:—We, the undersigned, members of Medical Organizations in the State of Illinois, respectfully submit the following reasons why House Bill 845 to license certain persons to test the eyes for glasses should be defeated:

(1) Because It Is the Practice of Medicine. The proper examination of the eyes for glasses is a medical act, requiring years of study and practice. The five weeks' course of study proposed in this bill is totally inadequate to cover Anatomy of the Eye or Ophthalmoscopy alone even in the most superficial way, let alone the eight other subjects named. It is absurd to suppose that even mechanical proficiency can be obtained in these things in such a length of time. The State might as well license druggists to prescribe strychnin because they can learn to weigh and measure it out in five weeks. Mere mechanical skill will not do. Only physicians can be entrusted with the care of the eyes. It is your duty to protect the public from incompetence and imposition.

(2) Because there are State Boards enough now; another to license opticians would simply be a needless expense and burden. The State Medical Board now licenses certain quasi-medical persons as midwives, embalmers and patent-medicine vendors. We might just as well appoint boards to license tailors and shoemakers.

(3) This bill was defeated in committee two years ago after a thorough discussion of its merits, and the Judiciary Committee unanimously reported the bill unfavorably to the House.

(4) This bill has not the unanimous support of the leading opticians of Chicago, and it has the unanimous opposition of the medical profession of the state.

We respectfully urge you not to create a useless board to license ill-prepared persons to practice a specialty.

In this connection it will be interesting to read Governor Deneen's veto, addressed to the Honorable House of Representatives: "I withhold my approval to House Bill 845, for the following reasons:

"I am informed by physicians with whom I have consulted regarding this bill that there is a general consensus of opinion among medical men that the eyes of young persons can not be refracted accurately without the previous use of medicines to suspend the accommodation. Such treatment enables the oculist to determine accurately errors of refraction. This bill does not permit optometrists to use such medicines. The methods practiced by optometrists, therefore, are, to a greater or less extent, experimental. A doctor who treats the eye is called an oculist as distinguished from a person uneducated in medicine who may learn to use a set of trial lenses in a few weeks and call himself an optometrist. An oculist may use a drug to suspend the accommodation, because he is a graduate of medicine, as a foundation for his special studies relative to the eye. An optometrist may not use such drug, nor any other medicine nor treat the eye, because he is not licensed by the State of Illinois to practice medicine. If, therefore, as provided by the bill, the use of medicine is not to be permitted, it goes without saying that the State should not endorse a person as capable of performing a function and at the same time withhold from him the most essential element for its successful execution."

E. V. L. Brown.

Reviews.

REVIEWED BY REINHARD REMBE, M.D.

CHICAGO.

Treatment of Retinal Detachment.[1]—PROF. R. DEUTSCHMANN, Hamburg.—Prof. Deutschmann is convinced that the treatment of retinal detachment, as advanced by Prof. Uhthoff, is of no value. He even objects to the so-called "peaceful" treatment, such as pressure bandage and the recumbent position. The time-honored diaphoresis by salicylates and pilocarpin, he claims, has frequently a detrimental influence upon the general constitution, but with no effect whatsoever on the ocular trouble. Deutschmann's methods of treatment are subconjunctival injections of weak solutions of hetol or salt, thereby inducing active secretion from the ciliary vessels, and in consequence the pressure of the vitreous is increased. After the subretinal accumulation of fluid has gravitated to the lowest point, he resorts to operative measures. Like Uhthoff, he strongly condemns punctate incisions of the retina, permanent drainage of the subretinal fluid, suction with hypodermic syringe, electrolysis, iridectomy, injection of tincture iodin, punctate incision into the sclera, and letting the fluid drain off; also the punctiform cauterization of the sclera, or any of the latter methods combined. He considers the above-mentioned procedures very hazardous and the benefit to be derived from them extremely doubtful, and for that reason they should be abandoned. The treatment that he relies on, which has been followed by unequivocal results and cures, are incisions through the vitreous, followed up with intrabulbar injections of animal vitreous. The incisions through the vitreous must be made downwards and should not be made until the subretinal fluid has gravitated to the lowest point. The injections may be repeated as often as twenty times or more. Injections of vitreous, however, are not to be attempted until all other methods have failed. One should begin with diluted concentrations, followed by gradually increasing concentrations.

Treatment of Parenchymatous Keratitis with Lipiodol.[2]—H. TERLINCK.—The oil iodin preparations have many advantages over the iodin salts, such as potassium and sodium iodid and the syrup iodid of iron. One advantage is that it can be employed subcutaneously, thus enabling one to give a more exact dose and a more certain embodiment into the organism. , These preparations remain for quite a time in the subcutaneous fatty tissue and allow the slowly split up iodin very gradually to become absorbed. Iodism has never been observed with their employment, not even in patients who would have reacted markedly after fifteen grains of iodid of potassium. Three or four injections daily will supply the organism with enough iodin for a month by its gradual absorption.

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[1] Münchener Med. Wochenschrift.

[2] La Clinique, June, 1907.

Terlinck, after a series of good results with Merck's iodopin, began with lipiodol on 22 patients afflicted with parenchymatous keratitis, 20 of whom had hereditary syphilis. Lipiodol contains 40 per cent. of iodin; the iodin is more quickly split up and absorbed than iodopin. Terlinck recommends injections of 65 grains for the first three or four days, and afterwards, if the doses are well borne, up to two drams. It is important to examine the urine for iodin during the treatment. It increases up to the fifth day, after which it usually remains about the same. As soon as the urine contains 10 1000 of iodin the injections must be discontinued, since greater amounts of iodin do not accomplish more, but, on the contrary, have a tendency to cause nephritis. For the latter reason, it is very important to look for albumin.

It is interesting to observe the marked improvement in the general constitution that takes place after the use of lipiodol, chiefly in the luetic cases. The hemoglobin rose from 80 to 90 per cent. and even to 100 per cent. It was remarkable to notice the increase in leucocytosis, particularly where the lymphocytes had increased; their percentage went up to double the amount. This leucocytosis remained as long as the iodin remained in the urine. Terlinck attributes this condition to an improvement in the general condition of the patient. Even the local manifestations were greatly influenced. The most favorable reactions were noticeable in the deep corneal leucomas. Many cases which resisted energetic mercurialization showed marked improvement under the lipiodol treatment. In no case could the extension of the processes be prevented, but they showed a rapid general improvement. [One must find it very strange that nothing in this publication is mentioned in regard to the simultaneous local treatments.]

Serums and Ferments as Therapeutic Agents in Eye Practice.[3] —M. DARIER, Paris.—The author obtained from antidiphtheritic serum, or from the antitetanic serum, therapeutic effects which were identical with those secured with the antipneumococcic serum (Roemer) for infected ulcers of the cornea. Darier employed the same serums in traumatic infections and after operations, achieving in several instances immediate improvement in the infectious processes, his results being similar to those obtained by the antistreptococcic and staphylococcic sera of Dr. Rogman.

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[3] Archives d'Ophthalmologie, Soc. d'Ophth. de Paris, June, 1907

Collargol rubbed in, or given in the form of intravenous injections, had a favorable influence upon the course of infected eyes, as in traumatism, iritis, blennorrheal iritis, ulcers with hypopyon. In all of these cases one must not forget the employment of topical applications which have proved of eminent value, such as the galvanocautery, iodoform, peroxid of hydrogen and subconjunctival injections.

Cocain Solutions of High Concentration for Cataract Operations.[4]—Prof. Fukala.—The author says that generally the solutions of cocain that are employed about the eye are too weak. He recommends a 4 per cent. nitrate of silver solution and a 15 per cent. solution of cocain for the removal of cataract and for other operations about the eye, and states that he has never seen any accidents from it. (It seems to the reviewer, it is understood that he uses nitrate of silver as a strong antiseptic before he operates upon the cataract, which is quite feasible.)

Treatment of Incipient Senile Cataract by Injections of Iodid of Potassium.[5]—Dr. Menacho, Barcelona.—Menacho gives an account relative to the results in quite a number of cases of treatment of cataract with iodid of potassium, and says that in no instance was the least improvement noticed, neither by instillation nor by subconjunctival injections. Not more than from three to four of the latter could be made, as invariably inflammatory adhesions of the conjunctiva occurred, thus preventing the continuance of subconjunctival injections.

In connection with this subject, it is interesting to look up the review in the Ophthalmic Record, February, 1907, in which the reviewer (page 77) says: "Too much should not be expected from this potassic iodid treatment. Several years ago it was advocated in France for the clearing up of lenticular opacities, to be used in the form of collyria, salve and eye baths, but on account of its painful effects it was soon abandoned. May we hope for better results from these painless subconjunctival injections?"

Intravenous Injections.[6]—Prof. Dr. Darier, Paris.—The intravenous injections of soluble mercury salts, and particularly the cyanid. are the latest therapeutic measures in the employment of mercury. The author has used these mercurial injections for a period of over ten years. Of course, he says: "One must admit that they are delicate and require a dextrous hand. The operator must be familiar with the rules of antisepsis and the modern clinical technique."

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[4] Soc. d'Ophth. de Paris; Archives d'Ophthalmologie.

[5] Archivos de Oftal. hispano-Americano, June, 1907.

[6] Archives d'Ophthalmologie.

The advantages of these injections are: absence of pain; quick effect, coupled with exactness and efficacy. Another benefit is the absence of local adhesions (infiltrations and thickenings), and there are no secondary after-effects, such as one notices so often with intramuscular injections.

The solution which is employed must be limpid and thoroughly aseptic; free from cocain and any other analgesics. The following formula is perfectly harmless:

R.	Hydrargyr. cyanid	gr. 5½
	Iod. chlorid.	gr. I¼
	Iod. phosphat.	gr. I 1/6
	Aqua sterilizat.	℥iii ʒi

Of this solution, from two to three centigrams should be injected very slowly into one of the veins of the elbow joint. The technique is simple. It is not necessary for the patient to undress himself. Should there be any difficulty in finding a large vein for the injection, then one should resort to subcutaneous or intramuscular injection. To find the vein easily, it is advisable to constrict the arm the same as in venesection. The field of operation is washed with chloroform, alcohol or corrosive sublimate solution; then a platinum needle, with iridium point, is drawn through a flame, after which it is cautiously and slowly introduced into the vein. Before the injection is given, it is advisable to aspirate a little blood to make sure that the point of the needle has entered the vein. The syringe should not be completely filled with the solution. If blood gets into the syringe, one is sure that he has not made a false passage; then the solution is injected before the bandage is taken off. The point is quickly withdrawn; light compression with a cotton tampon is made at the point of entrance and a drop of collodion is put on afterwards. It is wise to change the arms for injections. Too frequent injections in the same arm may cause marked sensitiveness. Before the injections are given, one should ask the patient whether or not he suffers with colic or diarrhea. If so, the doses should be lessened and not resorted to so often. After a series of thirty injections, an intermission of one month should be had; then a second series may be begun, and later on a third series.

In the cases of parenchymatous keratitis, or in cases of chorioiditis and iridochoroiditis, the number of injections, in the course of two or three years, is from one to three hundred. Very rarely does a complication, like phlebitis, set in. The entrance of large air bubbles into the vein is without danger, and even the accidental injection of a full syringe of air has happened once with no ill effects. Darier not only uses the cyanid, but also enesol, which is the salicyl arsenate of mercury. This salt is easily soluble and is quickly eliminated by the kidneys. It is said to be thirty times less toxic than the biniodid, and is used intravenously in the form of 3 per cent. solutions.

Darier injected one to two c.c. with most favorable results. In subconjunctival injections the remedy caused very little pain. This combination of mercury with arsenic seems to have a better effect than arsenic alone. He also employs salicylate of sodium intravenously, injected particularly in cases of iritis, episcleritis, and all other rheumatic affections of the eye. Half a gram injected into the elbow joint had a better effect than three grams of salicylic acid or aspirin taken internally.

Intravenous injections possess the great advantage that they are devoid of pain, gastric disturbances, dizziness, deafness, tinnitus aurium, loss of memory, and so on. The author also employs collargol intravenously in cases of purulent iritis. In one case, after one injection, immediate improvement took place. The hypopyon disappeared within a few hours. In other cases the results were not quite so brilliant. It has no effect in cases of panophthalmitis, even if used in its incipiency.

Reports of Societies.

OFFICIAL PROGRAM OF THE OPHTHALMIC SECTION OF THE TWELFTH ANNUAL MEETING OF THE AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY, TO BE HELD IN LOUISVILLE, KY., ON SEPT. 26, 27, 28, 1907.

Address: Eye Symptoms of Intracranial Complications of Otitic Origin. Dr. R. A. Reeve, Vice-President, Toronto, Can.

1. Ocular Symptoms Following Intracranial Complications of Otitic Diseases. Dr. Percy Fridenberg, New York City.

The occurrence and significance of choked disc and optic neuritis for the diagnosis and prognosis of otitic brain abscess, sinus thrombosis and meningitis. Views of authorities on this subject. Statistics of Koerner and Hansen. Author's statistics based on records of the N. Y. Eye and Ear Infirmary, 1905-1907, and including about 100 cases of intracranial complications of otitic diseases. Other ocular symptoms, palsy, squint, pupillary disturbances; lid edema and their clinical import.

2. Insufficient Pigmentation as a Cause of Eye Diseases. Major Chas. E. Woodruff, Plattsburg, N. Y.

Recent literature proves that excessive amounts of light, particularly the short violet and also the ultra violet rays, are always lethal to protoplasm. Not only does it inhibit or kill bacteria, but also every other unprotected cell. For this reason, in all plants and in all animals, including man, if the organism as a whole must be exposed to light, the individual cells are carefully protected from harm by pigments, hair or feathers. The pigments of the retina, chorioid and iris, therefore, have a use, rarely mentioned in the text-books, if at all, namely, they not only regulate the amount of light needed for seeing, but protect the optic nerve endings from injury or necrosis.

It is evident, then, that if nocturnal animals are exposed to daylight, they suffer from a number of eye diseases due to the light alone and to no other factor. Similarly, man's retina, chorioid and iris, like his skin and hair, are pigmented to a degree sufficient for protection from the light of his ancestral climate. If he was evolved in a dark, cloudy climate, such as characterizes the northwest corner of Europe, he needs little protection and is blond—the yellow-haired, blue-eyed Aryan race. If these blonds migrate into lands of strong sunshine, they invariably die out, through a greater mortality from all kinds of diseases and the nervous instability produced by excessive light.

The eye being flooded by light would naturally suffer most, and it is known that in southern latitudes the bright blonds do suffer from many conditions from which the brunettes seem to be immune. It is suggested that every ophthalmic patient have his complexion and color of hair and eyes recorded in the case books, and statistics gathered to see what types are mostly afflicted. This is with a view of forming generalizations which may be of as great practical therapeutic value, as similar observations in the case of neurasthenia and phthisis, both of which are more frequent in blonds and more easily cured in the dark cold northern latitudes.

3. An Inquiry into the Refractive and Pathologic Conditions of the Eyes of Old Soldiers, with Reference to the Frequency and Kind of Diseases to Which They Are Subject, with Special Reference to the Relation of These to Cataract.

Dr. D. W. Greene, Dayton, Ohio.

It is the purpose of the paper to submit a statistical report on the ocular conditions found in an examination, under homatropin, of five hundred inmates of the National Military Home, Dayton, Ohio, above 60 years of age, with a personal history of each case, as to former occupation, drinking habits and specific disease, with facial and ocular measurements, refraction, pathological findings and blood pressure records, and also a study of the possible relation of these to the 70 per cent. of cases showing some kind or degree of lens opacity, according to the Becker-Deutschmann theory which seems most consistent with all the facts, cataractous processes begin in the nucleus, when the lens ceases to grow and spread by fissuring and segmentation of the cortex and in more than 60 per cent. can be detected first in the cortex and always in lower half of periphery. The effects of gravity during the abnormal sclerosing process may have something to do with the uniformity with which this occurs.

It is believed that the genesis of hard cataract is to be found in degenerative changes (not necessarily due to age) in the different eye structures, especially of the lens itself. These are associated with so many different conditions that it is not possible in the present state of our knowledge to assign any one particular condition as a cause of cataract, but certain conditions are so uniformly present that their causative relation may almost be assumed. These relate to the condition of the blood vessels generally. These cases have not been selected. The only condition being that a satisfactory view of the details of the fundus and blood vessels could be had.

In order of the frequency low grade chorioidal disease comes first, shown by fine vitreous opacities, inflammatory and senile changes on the temporal side of or surrounding the disc, and often extending outward toward and into the macular region, making the so-called fluffy fundus and less frequently the more marked disseminated form is found, about 75 per cent. have shown these chorioidal changes.

Fine dust-like vitreous opacities have been looked for in all cases, especially in those giving a specific history. But, strange as it may seem, they have not been found in more than 2 per cent. Glaucoma has not developed in a single case from the mydriatic.

About 75 per cent. have some error of refraction, usually hypermetropia; myopia and astigmia are rare. Not more than 10 per cent. of the men wear glasses constantly. Many think that the strain of uncorrected refractive errors is a predisposing and not an exciting cause of cataract.

Systolic and diastolic blood pressure have been taken in most of the cases. It is interesting and profitable to observe that about 75 per cent. of those showing tortuous temporals and rigid radials with hypertension have some kind or degree of lens opacity. It is believed that this large per cent. is more than a coincidence and that diffuse disease of the arteries (sclerosis and fibrosis) will better explain the causes leading up to lens opacity in so large a per cent. of these men than any theory yet advanced.

It is not assumed that these statistics prove anything, but it is hoped that they may be of value through comparisons, analogies, averages and conclusions in showing the conditions under which cataract most frequently develops in this class of men and some other matters of interest.

From this point of view the statistics will be submitted.

4. The Treatment of Incipient Senile Cataract.

L. A. W. Alleman, A.M., M.D., Brooklyn, N. Y.

To the layman cataract is synonymous with incurable blindness. The fear of the knife has been the capital of the charlatan. The temporary visual improvement incident to the progress of the lenticular disease exploited as to the result of treatment.

Cataract is a term used to designate conditions which differ most widely in etiology and prognosis.

This discussion is limited to incipient senile cataract.

Knowledge of the etiology and pathology of the process a prerequisite for treatment.

Refractive errors an observed factor in causation.

The process one of impaired nutrition, whatever the explanation of the immediate causation.

The results observed from the use of dionin in complicated cataracts suggested trial in senile incipient cataract.

Theoretical reasons for its use.

The physiological action of dionin.

Report of a few cases illustrating the results obtained.

Conclusions.

5 Angiosclerosis of the Eye.

Dr. Robert Scott Lamb, Washington, D. C.

The causes of angiosclerosis may be summed up as follows: congenital anomalies, syphilis, faulty metabolism, toxic agents, including alcohol, tobacco and the toxins of the organisms of acute infectious diseases.

The histologic anatomy of the various ocular tunics and ocular vascular supply.

The early pathologic changes in the vessels are, of course, similar in all tissues, differing only in so far as surrounding tissues permit. With the slightest disorganization of the vessel wall there is transudation from the vessel into the contiguous tissue.

In the retina this causes an edema that may be limited to the nerve fiber layer and is readily remedied, but, on the other hand, it may affect the outer nuclear layer, in which case complete recovery can not take place.

The diagnosis is easy or not, according as one by experience is familiar or not with the slight changes in the color and shape of the retinal vessels; I say slight because, of course, the gross lesions are very plain, but the disease has progressed at this stage so far that it is less amenable to treatment.

The earliest ophthalmoscopic signs are the slight haze and indefiniteness of the disc and surrounding retina, with possibly obscuration of the capillary vessels: apparent nodes or interruptions in them, together with a tortuosity of the capillaries about the macula or at the periphery.

As the vessels become disintegrated and connective tissue forms the depression or indentation of the vein where the artery crosses the vein, and the apparent "hump" of the veins over the artery where the vein crosses the artery; at this time nodes appear on the larger vessels of the retina.

Together with these ophthalmoscopic signs the subjective symptoms will vary with a temporary scintillation, scotoma, temporary blindness as from arterial spasm, to headache, asthenopia, and progressive so-called "failing vision" or "weak vision."

The future of an eye that is diseased, dependent on angiosclerosis, is bright or dark, according to the period at which the lesions are discovered.

The treatment consists in correcting any disturbance of digestion by diet, lavage, cathartics, regulating the blood pressure by restricting the fluid intake and reducing the quantity of salt ingested (to prevent retention of excess fluid).

The sequel of angiosclerosis of the vessels of the eye may be any disease that can possibly result from the degeneration of the vessels, from a simple retinitis or chorioretinitis or retinitis circinata, to retinitis pigmentosa, or hemorrhagica, to cataract, glaucoma with or without hemorrhage, to embolism of the central or branch arteries or to thrombosis of a branch or central vein.

6. Glaucoma after Cataract Extraction.

Dr. Albert E. Bulson, Jr., Fort Wayne, Ind.

Glaucoma after cataract extraction fortunately not common. May occur after extraction with or without iridectomy. Is thought to be due, without exception, to changes which obstruct the escape of fluid at the filtration angle. After extraction with iridectomy it usually arises from adhesion of the pillars of the iris coloboma to the cicatrix and the lens capsule, thus interfering with the drainage of the eye, but it may occur after extraction with iridectomy when the coloboma is perfectly free, as in two of the author's cases. Predisposing influences—age, sex, temperament, health and previous physical condition of the eye. The influence of prominent ciliary processes in pronounced hypermetropia and of swollen ciliary processes arising from vascular or degenerative changes in the uveal tract. The increased tendency to glaucoma after discissions. Treatment—miotics, heat, rest, elimination, posterior sclerotomy. Prognosis not good, but more favorable if condition recognized early and appropriate treatment instituted. Report of author's cases.

7. Magnetic and Non-Magnetic Properties of Iron Alloys.

Mortimer Frank, M.D., B.S., Chicago, Ill.

The increasing individual use of the alloys of iron has resulted in marked changes in the quality of steel manufactured. The effect of these alloys as well as the percentage of carbon on the physical conditions of steel, particularly its magnetic property, is of considerable importance to the ophthalmologist. The subject investigated under two headings: first, those alloys of iron which are non-magnetic or nearly so even in strong magnetic fields; second, those alloys of iron which are more magnetic than the purest commercial iron, within a certain range of the magnetic field.

The alloying of iron by various percentages of manganese is surprising in its destruction and alteration of its susceptibility to magnetism. An alloy of iron with 13 per cent. of manganese absolutely destroys its magnetic character. The effect of composite alloys of iron is even more striking. Nickel steel, which in itself is extremely magnetic, even in percentages of from 15 to 25, becomes non-magnetic when 5 per cent. manganese is added, although a 5 per cent. manganese steel is fairly magnetic. An 8 per cent. manganese steel has considerable intensity of magnetization, but add $2\frac{1}{2}$ per cent. of nickel and it becomes non-magnetic, although the nickel steel in itself is extremely magnetic. The effect of annealed and unnealed states in the magnetic field. Excess of carbon in high manganese steels softens them and increases their magnetic susceptibility, but low carbon and the same percentage of manganese, 13 to 15 per cent., the steel is practically non-magnetic.

The alloying of iron with a 3 per cent. nickel produces a steel as good magnetically as very soft iron, and when the magnetic field is very low the permeability of a 30 per cent. nickel iron alloy exceeds the best and softest iron. Tungsten steel possesses remarkable magnetic properties, and is used commercially in percentages of 3 to 10 per cent. Chromium has a much less powerful effect in destroying the magnetic properties of iron and manganese, for iron containing 65 per cent. of chromium is still attracted by a magnet. Commercial steel contains 3 to 5 per cent. of chromium.

8. A Further Study of the Horopter.

Dr. George C. Savage, Nashville, Tenn.

The various horopters that have been described by different men from time to time will be considered. The two horopters, very differently constructed by LeConte, will be shown. Stevens' definition of the horopter, as given in his last book, will be referred to. The body of the paper will show that the circle of binocular single vision should not be called the horopter, but should be called either the isogonal circle or the monoscopteric circle. The paper will show that there is one primary isogonal circle, and that there are very many secondary isogonal circles, and that the planes of all these circles intersect each other at the line connecting the centers of the two eyes, this line being a cord common to every one of the circles. It will be shown that in ocular rotations the primary circle is made to take the place of that secondary circle by the superior and inferior recti muscles, and that these axes will be shifted towards and converge at the second point of view the moment the primary circle has displaced the secondary one, and that the horizontal meridians have been kept continuously in the plane of the primary circle as it was being rotated.

9. Defects of Abduction Associated with Retraction of the Globe in Adduction. Dr. John Green, St. Louis, Mo.

Defect of abduction associated with retraction of the globe in adduction. Description of the condition which appears to be a definite clinical syndrome. Duane's summary. Report of a case with photographs.

10. Advancement Versus Tenotomy.

Dr. C. Barck, St. Louis, Mo.

Within the last ten to fifteen years advancement is gradually gaining more favor. But the choice between it and tenotomy is an arbitrary one and no unanimity has been reached in regard to the indications for the one or the other. The essay dwells on the advantages and disadvantages of each procedure and tries to establish more definite indications. Whilst previously tenotomy was the routine operation and advancement was restricted to exceptional cases, it recommends the latter as the operation of election and limits the former to a certain class of cases. The conclusions are:

1. Before the age of 12 tenotomy ought not to be performed.

2. If optical and orthoptic treatment is unsuccessful within a reasonable time, advancement is indicated.

3. After the age of 12, tenotomy should be confined to cases where the vision of the one eye is not less than ½ that of the other.

4. In all the other cases of convergent and in all cases of divergent strabismus, advancement ought to be performed.

11. The Relative Importance of the Fitting of Glasses in Ophthalmic Practice. Dr. Linn Emerson, Orange, N. J.

Tendency to underestimate the importance of refraction work. Undue prominence given to various surgical procedures; due in a measure to faulty teaching, and work observed in hospitals by students and internes. More poor refractionists than poor operators. Special adaptability for the work which requires much time and patience.

Harm done by men who recommend the non-use of cycloplegics. Relative value of cycloplegia, ophthalmometer, shadow test, trial lenses, and various apparatus for the estimation of muscle balance.

Casual relation of errors of refraction in heterophoria, heterotropia, cataract, glaucoma, etc.

Refracting opticians and their fight for recognition. Importance of correct optical work and the necessity of seeing glasses after patient gets them from optician.

12. Methods of Illuminating Test-Type Charts.

DR. NELSON M. BLACK, Milwaukee, Wis.

Illumination of test-type charts by reflected and by transmitted light is described and the advantages and disadvantages of each discussed.

Various methods used to light charts are described, followed by a description of the proper methods, according to the ideas of an illuminating engineer.

13. Treatment of Partial Optic and Retinal Atrophy by Electricity and Massage (second paper).

DR. H. V. WÜRDEMANN, Milwaukee, Wis.

In this paper the author continues his observations upon the effect of high tension faradic and galvanic electricity and ocular massage in the treatment of primary optic nerve atrophy; makes a further report on the seven cases reported at the 1906 meeting of the Association, and gives case histories of fifteen more cases. He shows the limitations of this form of treatment—that it is only efficacious in primary optic nerve atrophy, and proves that the artificial congestion of the disc produced by electric and vibratory stimulation brings more nutrition to the nerve, causes absorption of the white elastic tissue, and thereby stops the sclerotic process, and in most cases permanently increases vision.

14. Remarks on Vibratory Massage in Eye Diseases.

DR. LEARTUS CONNOR, Detroit, Mich.

This paper seeks to answer the question, "What, if any, addition has vibratory massage brought to ophthalmology?" It begins with a brief statement of finger massage, its methods and uses as established by past experience. Observations are then presented, showing that under definite conditions vibratory massage reduces eye tension; increases the transparency of the ocular media; enlarges the retinal vessels, and improves vision. From these it is inferred that vibratory massage augments the outflow of lymph and venous blood from the eyeball and the inflow of pure arterial blood with more rapid lymph and aqueous formation. Nor can it be doubted that every living cell or bit of protoplasm within the eyeball may be incited to greater activity. Thus it is evident that vibratory massage is not a treatment for any specific disease (it neither kills nor frightens pathogenic germs nor neutralizes toxins or poisons of any sort), but is a force capable of favorably influencing the underlying pathological condition in many diseases, organic or functional. The importance of the technique is emphasized and briefly described. In estimating results, the mental effects of the vibratory massage must be kept in mind. Clinical evidence is presented showing improvement under vibratory massage, when ordinary measures had failed, in several classes of cases. It suggests that vibratory massage has a field of usefulness, which may be increased by further study and improved technique.

15. Can a Substitute for Simple Enucleation Be Employed in Every Instance?

Dr. George F. Suker, Chicago.

Whenever an enucleation is indicated, in such cases an implantation for securing a more prominent stump is likewise justifiable. Every operation ought to have in view two main features: (a) primarily curative (at times palliative); (b) a cosmetic value. It is only in the extreme exceptional cases that an implantation can not be thought of or performed. The element of time necessary for the healing of the stump so that the prothesis can be worn early should be a secondary consideration in most instances.

1. The various types of implantation.
2. The technique employed and after-treatment.
3. The kind of material used for the implantation and its preparation.

(a) The manner of manipulating the orbital fascia for the reception of the implantation.

4. The advantages of implantation into the ocular fascia over scleral implantations.
5. The relative cosmetic value of the various implantations.
6. The preservation of the complete functions of the lids by preserving their sympathetic nerve supply.
7. The necessity of securing and maintaining the correct anatomical position of the caruncle after an enucleation for cosmetic purposes.

16. Glioma Retinæ, with Report of a Binocular Case Cured.

Dr. Charles Lukens, Toledo, Ohio.

A male child, 9 months old, had typical glioma reflex from pupil, media clear, blood vessels seen overgrowth, tension normal. Enucleation, rapid healing. Eye hardened in formalin, cut through poles; tumor filled half of vitreous chamber. Microscopical examination; glioma springing from the nerve fiber layer of retina, optic nerve not involved. Two and one-half years later other eye affected, glioma reflex, clear media, tension normal, operation refused until eye had only light perception, then enucleation, rapid healing. Eyeball hardened in formalin. Tumor filled half of vitreous space; glioma encroaching from all sides was involving nearly entire retina, springing from both granular layers; nerve infiltrated in scleral opening. Patient well sixteen months after last operation.

Glioma is rather rare. Early observers thought it incurable. Modern general pathologists disagree as to its nature and classification. Opinions quoted; Jessop's and Hirschberg's observations studied. Two stages of growth, intra-ocular and extra-ocular. Operation during first stage will usually cure, so far as the operated eye is concerned. Diagnosis, from pseudoglioma, detachment of retina, sarcoma of chorioid, tubercle, subretinal cysticercus and congenital malformations. Operate as soon as diagnosis is made; get as much of the optic nerve as possible. If the second eye becomes involved after one eye has been sacrificed it should be dealt with like the first, providing there be no evidence of recurrence from the first glioma.

17. Dilatator Pupillæ. DR. ADOLF ALT, St. Louis, Mo.

A review of the literature on the dilatator pupillæ with description and illustrations of the results of the author's own studies concerning this muscle.

18. Corneal Lesions Dependent on Accessory Sinus Diseases.
DR. H. MANNING FISH, Chicago.

A brief review of the regional anatomy of the sinuses and orbit. The discussion of the etiologic bearing that accessory sinus complications may have upon corneal ulcers, abscesses and infiltrations; phlyctenular keratitis and conjunctivitis as well as a certain type of herpes of the cornea. Citation of cases showing these interdependent conditions. A brief review of ocular conditions other than those mentioned which are dependent upon accessory sinus lesions. Facts and theories to be advanced which conclusively prove the close relationship existing between certain direct and indirect sinus complications which may bring about ocular lesions.

19. Some Experience with Simple Glaucoma, with Conclusions Therefrom on the Relative Value of Operative and Non-operative Treatment. DR. H. B. YOUNG, Burlington, Iowa.

20. Ocular Manifestations of Nephritis.
DR. J. O. MCREYNOLDS, Dallas, Texas

21. A Study of Refraction Based On Four Thousand Cases.
DR. J. F. BYINGTON, Battle Creek, Mich.

Classification of cases as to the amount of hypermetropia, myopia and astigmia, the axis of the astigmia and muscle balance.

Method of examination. Retinoscopy is a valuable aid in determining the kind and amount of refractive errors, but zeal for objective methods should not make one less thorough with the subjective test. The latter requires more patience on the part of the examiner, but the author believes it to be more accurate than any objective method yet evolved, at least with patients of average intelligence and powers of observation. The results of the objective examination should be proven, or improved upon if possible, by a careful use of the trial case.

Technique of the subjective test both with and without cycloplegic. Test objects used. Position of patient and examiner. Cycloplegic employed.

Some principles and rules by which the author has been governed in writing the prescription. Many factors to be considered, such as the total and manifest refraction, the muscle balance, the age and occupation of the patient, the state of his general health and that of his eyes and his previous correction of refractive errors. The relative value of "transposed" lenses. Advantages and disadvantages of deep periscopic and toric lenses. In the correction of aphakia if a periscopic lens is prescribed, it must be prescribed weaker than if a double convex lens is ordered.

22. Ophthalmia Neonatorum Legislation. Report of committee appointed in 1906. Dr. F. Park Lewis, Buffalo, N. Y.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Saturday, May 25, 1907.

Priestley Smith, F.R.C.S., in the Chair.

Mr. George Coats gave a lantern demonstration on the pathology of rupture of Descemet's membrane. They were first discovered microscopically by Becker in 1875. Coats had found them in 12 out of 13 cases of buphthalmos and in 2 out of 8 cases of glioma with increased tension. They were absent in 4 cases of high myopia. The ruptured ends were sometimes found to be flat and sometimes curled up, but the rupture itself was almost always covered with endothelium. At times extensive detachment of the membrane was found.

Experimentally, he found that the globe would give way before the membrane would rupture, but if the membrane was first scratched many fractures of the rupture could be reproduced.

Dr. Edridge-Green gave an account of his observations with Lord

Rayleigh's color-mixing apparatus and showed a table which brought out the fact that there were extraordinary differences in the way in which people were able to match the colors. This was not due to any physical condition present, but could be readily explained physiologically in accordance with the author's theory of color vision.

Dr. Alexander Bruce gave a most lucid lantern demonstration of the third-nerve nucleus and its surrounding parts.

Mr. Sydney Stephenson described the present position of the spirochæta pallida in relation to syphilitic affections of the eye. After briefly reviewing the evidence in favor of the spirochæta pallida being the specific element of syphilis, he described the special researches which had been made on the eyes of man and the lower animals. In congenital syphilis the organism had been found by Stock, Peters, Römer, Bab and himself. He detailed the experiments of other observers who had produced interstitial keratitis in the eyes of monkeys and rabbits with syphilitic material from man, and had found spirochetes in the lesions thereby produced. As regards clinical syphilis of the eye, the organism had been found by himself and other observers, and he expressed his belief that the presence of Schaudinn's organism was the strongest possible proof of the syphilitic nature of any given disease of the eye or of any of its appendages.

Dr. Leslie Buchanan showed a series of lantern slides of preparations of eyes of invertebrates, with the object of indicating that from the anatomical structure a certain amount of information can be obtained as to the degree of functional activity of which the organ is capable. The preparations included sections of the eye of the octopus, the clam, the spider, the caterpillar, the house fly, the bee and the snail. Sections of the eye of the Australian mole and of the leech were shown to illustrate the fact that loss of functional activity leads to anatomical degeneration.

Dr. Buchanan also demonstrated a case of rupture of the pectenate ligament. A man was struck on the left eye by a broom handle in the end of June, 1906. Among other injuries to the eye there was what appeared to be a large coloboma of the iris in a downward and inward direction, accompanied by high tension and loss of vision. The case was considered to be one of rupture of the pectenate ligament, with displacement of the iris and ciliary body backwards along the sclera. As the eye continued to be painful, it was excised in January, 1907, when, after histological examination, the diagnosis was proved to be correct. Microscopic preparations were shown.

Dr. Angus McGillivray read a paper on the after-treatment of cataract. To obviate the dragging on the ciliary body and the risk of cyclitis, he divides the capsule diagonally from above downwards and inwards by very short and steady sawing movements by means of a specially designed cutting needle. Since adopting this sawing method of dividing opaque capsule after cataract extraction, little or no trouble had been experienced, so little, in fact, that he does not now hesitate to divide an opaque capsule when the vision is, from this cause, below 6/xii.

Dr. McGillivray also showed a very convenient storage battery for ophthalmic use.

Dr. Arthur Sinclair and Dr. Theodore Shennan described a case of Parinaud's conjunctivitis in a man, aged 61, who was a painter's laborer. The left eye became affected during the third week in July, 1906. About three weeks later the surrounding lymphatic glands became enlarged. The patient was under observation for four months, and had not completely recovered when he ceased his attendance and could not be further traced.

Dr. Shennan described carefully the histological and bacteriological condition found. Two varieties of staphylococci were the organisms found.

Dr. Inglis Pollock described a case of telangiectasis of the retinal capillaries and venous radicles. The condition followed on fracture of the left side of the skull, due to a heavy weight falling upon his head. He showed an ophthalmoscopic drawing of the fundus. Numerous card specimens were shown.

Dr. Arthur Sinclair showed a collapsible apparatus for testing the field of vision. He also showed the charts from a case of glaucoma, showing remarkable restriction of the fields of vision in both eyes. He also showed a case of retinitis punctata albescens.

Dr. Alexander Bruce showed two cases of intracranial neoplasms.

Dr. Robert Fleming gave a microscopical demonstration of an optic neuritis in relation to intracranial tumors, with special reference to the changes in the neuroglia cells.

Dr. E. Bramwell exhibited a brain showing occipital abscess from a case in which epileptic fits were preceded by visual auræ and in which remiachromatopsia developed. Also a case of ocular palsy, with congenital absence of cranial nerve nuclei.

Mr. Berry showed several cases. He exhibited a loup for the use of myopes, and test objects for illiterates.

Dr. Mackay exhibited some unusual clinical cases and colored drawings.

Dr. Sym showed a case of complete congenital anophthalmos and other cases.

Dr. J. V. Patterson showed a case of tubercle of the conjunctiva and a very pretty case of reticular keratitis.

Dr. Maitland Ramsay exhibited an opaque projector for teaching purposes and some pathological specimens.

Lieutenant-Colonel Herbert, I.M.S., gave a lantern demonstration of the sinuous lid border as a sign of trachoma.

C. Devereux Marshall, F.R.C.S.

OHIO STATE MEDICAL SOCIETY.

SECTION ON THE EYE, EAR, NOSE AND THROAT.

William E. Bruner, M.D., New England Building, Cleveland, Ohio, Chairman for ensuing year.

Wade Thrasher, M.D., Cincinnati, Ohio, Secretary for ensuing year.

T. F. Bliss, M.D., Springfield, Ohio, presented a paper on

CORNEAL INFECTIONS.

Dr. Bliss classified the diseases of the cornea as local and constitutional, confining his paper to those of local origin due to bacteria, some of which are known by name and some only by their vicious work. The ability to meet these conditions in practice, rather than an academic knowledge of the special germ, is the test of the surgeon's skill. As a rule, local infections of the cornea follow traumatisms, in which the infecting germ enters the wound with the foreign body that causes the wound, or, later, before the wound is healed. But the eye is almost immune from infection when injured by a sterile agent, and this statement applies not only in the case of minute foreign bodies that strike the eye and remain for a time, but also of the major operations under proper aseptic methods—although the conjunctival sac is never free from bacteria. This statement is from the author's personal experience with cases that have come to him with a foreign body intact, but not of all cases that have come with a history of having had something in the eye that had been removed by some expert shop hand with a tooth pick, silk handkerchief or some other equally vicious instrument, as the only cases he has had trouble with in the last twenty-five years have had some such history. And while the eye may apparently recover from a serious infection following corneal wounds due to the use of a pin, needle or point of a knife, often the foundation is laid for organic changes later.

The most serious infections met with are often from slight erosions that cannot be seen, in which the patient complains of having been hit in the eye by a bug while at work in the garden or field. The patient usually comes a few days after the incident has been forgotten, complaining of a sharp pain, and inspection may reveal a little gray or yellow ulcer near the center of the cornea, and, mistaking it for a foreign body, the oculist may pick at it and send the patient away. This may be a fatal error, for the day following, when the patient returns or goes to some other physician, the ulcer may have extended, a yellow line showing pus is seen in the anterior chamber and all evidences of a serpiginous or rodent ulcer be manifest. The bacteria that have taken possession under such circumstances are peculiarly virulent and when their colonies invade the deeper layers of the cornea they have a wonderful capacity for blocking the pathways against remedial measures, and while the débris may be cleared away the germs that are doing the mischief keep busy. As the margins of the ulcer break down, a fissure is noticed in lieu of a spot, the yellow line in the anterior chamber rises daily, the fissure extends, radiating lines appear in the cornea and there are visible evidences of iritis, and the case may go from bad to worse. There is a constant watery secretion, possibly mixed with pus, not much swelling of the lids, some conjunctivitis, and a great deal of pain. And, judging from the various authors on diseases of the eye, the best men in the profession acknowledge defeat not infrequently. Advanced age and arteriosclerosis make these cases very difficult to handle.

Success in treatment should always be directed to the prevention of the entrance of germs into wounds or their prompt destruction if already there. The laboratory examination should be made early for the good of the patient, while a late examination will add to the knowledge of the bacteriology of corneal infections.

Infection with the diphtheria bacillus and the gonococcus are almost always secondary to conjunctival infection, and, as the safety of the eye depends largely on the integrity of the cornea, the physician should watch anxiously for the first sign of its involvement in these cases. The pneumococcus infection is one of the most serious and its early discovery is a warning to look out for serpiginous effects and prepare accordingly.

The vast majority of corneal infections are due to the local pus germ, the staphylococcus, and usually these yield readily to mild treatment. Foreign bodies should be removed under the influence of cocain and strictly aseptic conditions. The bandage is frequently the means of introducing uncleanliness; therefore, the author advocates sending the patient away without one, believing the cooler air safer than the hot bandage and less likely to promote infection. Suspicious ulcers should be curetted, using boracic acid solution and atropia, and cold compresses as routine treatment, with such additional treatment as the case may suggest. For the most serious cases, protargol has been invaluable and later nitrate of silver, while for external application the author has depended largely on muriate of ammonia in solution, hot or cold, dilute camphor and steam. If the pneumococcus has been the infecting agent, the actual cautery will do more to check its progress, and, as the pneumococcus ulcer can not be depended upon to stay dead after you have killed it, the cauterization should be repeated daily if necessary. After curetting, tincture of iodin has given most favorable results.

If in doubt as to the denuded extent of the cornea, one drop of flourescin will outline it; and if the general physical condition is low in all severe inflammations of the eye or serpiginous ulcers, quinin in fairly large doses has been of great value.

Dr. Bliss has made the Saemisch incision with indifferent results, and, as it is always painful, patients object to it. By the prompt use of steam or hot fomentations much may be done to preserve the utility of the cornea and possibly its loss may be prevented. Nitrate of silver is the sheet anchor in gonorrheal ophthalmia of adults or infants.

Discussion.—Dr. D. W. Greene, of Dayton, spoke as follows: The paper is of value in that it brings to our attention a chain of cases which fortunately are not frequently seen, but about which we can not think too much. What they lack in frequency is often made up in virulency. The most cases I have seen have not come from foreign bodies themselves, but from infection in efforts at removal, just as Dr. Bliss has told us. One of the worst cases seen within the year came from an attempt to remove a piece of emery with a wire from a shop broom. The bit of emery was probably sterile when it imbedded in the cornea and the same would have been true of small particles of steel or iron, the rapid revolution and great heat engendered by pieces of metal revolving in lathes being dressed down, drilled and made sterile; but the wire from the broom infected the cornea in my case and great damage was done. Injury of any kind to the cornea in old persons should always be carefully looked after. The danger in such persons comes from the mismanaged or neglected lacrimal disease and not from poor nutrition of the patient. As a rule, old eyes usually heal well after extraction. In fact, a very large per cent. of our extractions are made in persons beyond 50 years of age. The high per cent. of successes shows that age has very little influence in determining the result. notwithstanding that about 75 per cent. of all men beyond 60 years show pathology. I can not conceive of any curative power that a section through the base of an ulcer can exert that can not be better obtained by a paracentesis at the limbus if made early. The only successful way to treat infection after cataract extraction is not to have them. and this is not possible in all cases. I do not think I have ever seen a severe infection stop short of total suppuration of the cornea. Some mild infection I have seen remain confined to the lips of the incision and a macula result involving the upper quarter or less of the cornea which admit of vision being improved by iridectomy.

As for the treatment of these conditions. I have very little faith in drugs or even the galvanic cautery. It seems to me the cases that we think we have cured are always mild ones, which in the nature of things would not have gone to the bad. The structure of the cornea and its lymph channels make it possible for germs to spread and disseminate through it more rapidly than we can destroy them unless we do as much harm to the cornea as the disease itself is likely to do. Having faith in the acid method which has demonstrated over and over again that a 2 per cent. solution of nitrate of silver will destroy the gonococcus in the conjunctiva, I always use it in corneal affections from other germs, sometimes in very strong solutions. In a recent case of follicular ulceration of the cornea. in which six weeks of local and constitutional treatment failed to bring about a cure. two very light applications of a solution of 120 gr. to the ounce, to the corneal ulcer and the fissure, under chloroform narcosis. brought about a cure in a week. and after two months the child is still well. I have used all the newer substitutes for silver nitrate. but have found them bland, harmless and inefficient. Hot applications I always use, but have had no experience with the steaming methods Dr. Bliss advises.

H. B. Harris, M.D., Dayton, Ohio, read a paper on

THE TREATMENT OF PURULENT OPHTHALMIA.

Dr. Harris stated that his paper is confined to the treatment of gonorrheal ophthalmia and that the present high standard of obstetrical practice includes such cautious antisepsis before, during and after labor that the danger of infection is distinctly lessened. The eyes of those children who have passed through a birth canal known to be infected or from which the suspicion of infection can not be positively eliminated prior to birth should be treated as follows: As soon as possible after the birth of the head the eyelids should be carefully cleansed, parted, and a 25 per cent. solution of argyrol freely instilled into each eye. Whenever infection or the suspicion of infection can be excluded, milder measures will suffice, as cleansing the lids and flushing the eyes with saturate solution of boracic acid.

In treating an attack Dr. Harris advocates the following routine: First, procure a competent and well-trained nurse, if possible, to carry out the following directions: Wash the edges of the lids and lids themselves every half-hour with a saturated boric solution and anoint the edges with sterile oil as needed to keep them from sticking together; instil freely between the lids a 25 per cent. solution of argyrol every one to four hours according to the severity of the case. The solution sinks to the bottom of the cul-de-sac and floats to the surface the pus and mucus, which can then be removed with very little manipulation. When the cornea is hazy instil one drop of .5 per cent. solution of pilocarpin once daily. Atropin may be used as needed if the cornea becomes involved.

Complications and sequelæ are treated according to indications. The eye should be manipulated as little as possible and foreign substances kept from coming into contact with the cornea as in its macerated condition contact with the most delicate substance may produce an abrasion which constitutes a site for infection.

Dr. Harris spoke of cases treated during his service in the Wills Eye Hospital in 1904, at which time all the text-books agreed pretty well upon the treatment as follows: cleansing, cold applications in stage of swelling, local applications of silver nitrate in stage of profuse discharge, solutions of bichlorid of mercury, permanganate of potash, boric acid, etc., and one or two books mentioned in a casual way the newer salts of silver. But a new era was then dawning and the text-books in the future will give these preparations more space, as some of those published since then have already done. All of these remedies, except the silver, were almost useless, so it has been exploited for years as the sheet anchor in the treatment of this disease. The following is a statement of cases treated:

One hundred cases of ophthalmia neonatorum of gonorrheal origin in which nitrate of silver was used; the corneæ were clear when first seen, and seven corneæ were damaged sufficiently to interfere with vision, making 7 per cent. of unsuccessful cases. They were under treatment on an average twenty-four days.

One hundred cases of ophthalmia neonatorum of gonorrheal origin in which protargol from 5 per cent. to 20 per cent. strength was used. Corneæ were clear when first seen; 2 per cent. were unsuccessful in the same way as those stated above. No unsuccessful cases occurred in those treated with 10 per cent. strength. Those under treatment with the stronger solutions were under treatment on an average seventeen days.

Seventy-two cases entered with clear corneæ in which argyrol was the principal remedy, and all of which were discharged after an average of eighteen days' treatment.

Eleven cases treated with argyrol in which the corneæ were hazy upon admission and only one went to ulceration.

Ten cases in which there were already corneal lesions in which argyrol was used, and in this group only one eye was lost.

These results show a vast improvement over the nitrate of silver treatment and speak well for the modern salts of silver. Dr. Harris stated the crucial test of any remedy in gonorrheal ophthalmia is its application to the disease in the adult, and that in a large number of cases in the adult, collected at the same time, the results were greatly in favor of the newer silver salts. The best results were had from the 25 per cent. solution of argyrol and the 10 per cent. solution of protargol. These newer salts of silver require very little care and manipulation, as they are devoid of destructive acids. Argyrol is non-irritating and has a slight anesthetic effect, a point much in its favor, while silver nitrate is very irritating and always causes the child to cry, which congests the lids and their sharp margins press against the corneæ which in their macerated condition are very easily divested of their epithelial covering. While the application of ice or cold compresses is allowed a limited time during the stage of swelling, the text-books recognize that cold is unfavorable to the nutrition of the cornea and for this reason a strong argument in its favor should be proven before its habitual use is advocated. Neisser says the growth of the gonococcus is inhibited when the temperature is brought below 86 F., and it is very improbable that this can be done and it seems a high price to pay for the relief of pain if greater corneal destruction is to follow. In conclusion, Dr. Harris made the following deductions:

1. The application of the modern salts of silver is far easier, requiring very little manipulation of the eye, is safer and produces better results than the application of nitrate of silver.

2. Either argyrol or protargol is an eminently efficient remedy in ophthalmia neonatorum and gonorrheal ophthalmia in general, with the preference given to argyrol.

3. That the use of cold in these cases is dangerous and should be abandoned.

In looking up these records, Dr. Harris has followed very closely the plan of Dr. Miles Standish, of Boston, which he presented in a paper in the Ophthalmic Section of the A. M. A. in 1904, and which he has found to be of great help.

Discussion.—Dr. John E. Weeks, of New York, said a purulent ophthalmia may be present without the presence of the gonococcus. In these cases the prognosis is more favorable. We have two micro-organisms found in the conjunctival sac that may be confounded with the gonococcus: One is the *Diplococcus catarrhalis* and the other the meningeal coccus intra-cellularis. These two resemble the gonococcus so closely morphologically that differentiation must be made by culture tests. Ophthalmia neonatorum in about 80 per cent. of cases is due to the gonococcus. In regard to the treatment, Dr. Weeks favored cold applications, by means of which the temperature in the conjunctival sac may be reduced to 80 or 90 degrees, and that while the growth of the micro-organism can not be stopped at that degree of temperature it can be materially retarded.

Dr. Greene, of Dayton, is not in favor of using the silver preparations in the treatment of this trouble, as he finds them bland, inefficient and harmless.

Dr. Clarke, of Columbus, spoke in favor of the use of argyrol and protargol in the treatment of the trouble. In his experience good results have always been attained through their use.

Dr. Harris, in closing the discussion of his paper, emphasized what he had said in the paper against the use of cold applications in the treatment.

J. E. Brown, M.D., Columbus, Ohio, presented

A REVIEW OF THE OCULIST'S RECORDS FOR TEN YEARS AT THE OHIO INSTITUTION FOR THE BLIND.

The records of the Ohio Institution for the Blind contained no data on eye conditions of pupils other than that furnished on the application blanks sent in previous to admission, which was necessarily meager if not actually misleading up to July, 1896, at which time the position of visiting and examining oculist was created, and since then Dr. Brown has endeavored to maintain records showing actual eye conditions and causes of blindness and, through contact with newly admitted pupils, to follow up and see that proper treatment was received in all cases needing same and where hope for improved vision could be entertained.

As the institution is maintained for educational purposes and only in a limited way for trade instruction, and only incidentally for hospital purposes, its pupils are drawn very largely from children of age between 6 and 20 years, i. e., of common school age, and whose eye lesions are not usually in the stage of activity demanding treatment. A limited number of adults whose blindness has been acquired since school period of life apply for admission to receive instruction in a trade, which at present is practically limited to broom-making.

Dr. Brown stated that in a surprisingly large number of cases the candidates for admission have not even had their condition passed upon by a competent oculist, much less have they received treatment called for by the condition present, and as the patient is often of tender age it is sometimes difficult to ascertain just what care and attention may have been given an individual case. However, the data has been accurate enough to prove that there is a surprising lack of care for these unfortunates, that conditions of congenital blindness, complete or partial, have been taken for granted and in cases of acquired eye disease affecting vision there has been lamentable neglect. The law specifies that the school is for the benefit of the blind, or purblind, or children of school age who on account of visual defects are unable to obtain an education in the public schools. This accounts for the gradations to be found in degree of visual acuity, the law naturally being constructed to give the pupil the benefit of doubt where doubt exists. While it is now and then imposed upon those who seek special instruction, generally in music, at the expense of the state, on the other hand there are many parents who through false interest or misdirected sympathy deprive their unfortunate offspring of its advantages without providing at home any suitable substitute for mental training or discipline. As yet the institution can scarcely be called industrial. It is educational, and Dr. Brown pleads that the welfare for the juvenile blind is for the development of the industrial element in their training by the state. The later in life such instruction is begun the less efficient it is. To attain the best results the institution should have all the power of parent or guardian, and for this plan to reach efficiency the institution should be entirely free from political domination—an end easily possible if the immense responsibility of the state in its care for the blind were properly appreciated.

Dr. Brown seconds the efforts of the Committee on Ophthalmia Neonatorum of the A. M. A. by preparing, at the suggestion of the superintendent, a page for insertion in the last report of the institution, being a slightly modified form presented by Priestley Smith, as follows:

"Prevention of Blindness from Inflammation of the Eyes of the New-born and Advice to Mothers and Nurses:—It can not be too widely made known that many persons are blinded every year by diseases that are preventable and curable. The most destructive of these diseases is the ophthalmia of the new-born infants. Nearly one-fourth of the present pupils of this institution owe their blindness to this cause, and the same high proportion has been found to obtain in other schools for the blind. It is fair to say that in nearly all of these the eyesight might have been saved by proper treatment at the commencement of the disease; the disease usually arises through ignorance of the danger and consequent delay in obtaining medical treatment. Delay is dangerous and in the case of the new-born babe the parents or nurse must not wait until the symptoms of inflammation have become severe, but must give the case more careful attention whenever any signs of inflammation present themselves.

"This form of ophthalmia is due to the infection of the baby's eyes with irritating material during or very shortly after birth. About the third day after birth—in some cases a little earlier, in others a few days later—the baby's eyelids become swollen, and a yellowish secretion is found forming and discharging from the eyes. This is the sign of danger. Skilled medical advice should be obtained without delay. In the meantime the baby's eyes should be cleansed in the following way:

"Place the baby on its back with a cloth under its head; separate the eyelids gently with the thumb and finger, and with a bit of fresh absorbent cotton or a soft clean bit of cloth drip warm water freely into the eyes, moving the lids gently over the eyes, so as to wash away as thoroughly as possible every bit of secretion that has formed. This should be repeated hourly, or in cases of much secretion half-hourly, until the services of a competent physician have been secured.

"The laws of the State of Ohio recognize the importance of this, and require the nurse, midwife or person in attendance upon the infant to report to a licensed physician within twenty-four hours after it has been noticed the fact that this inflammation exists, and failure to do so is punishable by fine or imprisonment, or both. Neglect of early treatment may result in blindness within a fortnight."

Dr. Brown believes that such information as this should be widely disseminated, and that until a better form is suggested some systematic distribution of a leaflet of this kind could be well practiced.

Sympathetic ophthalmitis ranks next in importance; two cases of pemphigus conjunctivæ are noted; a few cases of ectopia lentis resulting in partial blindness as well as six cases in which albinism is assigned as a cause of defective vision. In congenital anomalies total aniridia was found twice, and many other deviations from the normal.

Dr. Brown holds that syphilis underlies probably every case of interstitial keratitis and is probably the frequent remote cause in a majority of cases of congenital neuro-retinitis and chorio-retinal atrophy.

Discussion.—Dr. Means, of Columbus, in the absence of Dr. Derrick T. Vail, of Cincinnati, opened the discussion of this paper, saying that physicians throughout the State of Ohio are not sufficiently acquainted with the advantages afforded the blind in an institution of this sort and consequently do not send patients there who should be sent there for treatment.

Dr. John E. Weeks, of New York, referred to retinitis pigmentosa without the development of pigment, which sounds paradoxical, but emphasized that one of these conditions of interest is that of retinitis pigmentosa without the development of pigment. Retinitis pigmentosa is essentially a condition of the chorioid and retina and is congenital probably in all cases. It occurs in a very small percentage of cases without pigment simply because the epithelial cells of the retina do not become hyperplastic, but in all other respects the changes are just as found in retinitis with pigmentation. The Doctor said the question of operation in ectopia lentis is interesting with a vision of 20/40 or even a little less, and thinks all would hesitate to operate under such conditions, but that there are quite a few cases that can be benefited by removal of the lens.

Dr. Brown, in closing, said that with fairly good vision in these cases operation is not done, because if bad results follow the physician in institutional practice could be severely criticised on account thereof.

D. W. Greene, M.D., Dayton, Ohio, read a paper on

A METHOD OF EXTRACTING THE CAPSULE LEFT AFTER THE ABSORPTION OF TRAUMATIC AND OTHER CATARACTS.

According to Dr. Greene's method of extraction, an effort is made to twist or roll up the capsule on the point of a right angle, very sharp needle, the original of which he had improvised by straightening the curved part of a Tyrell iris hook to about a right angle to the shank of the instrument at about 2.5 mm. from the tip, which must be small and very sharp. A recent experience has demonstrated to Dr. Greene that a needle bent to less than a right angle, or a sickle-shaped needle with considerable curve, would pass through the cornea easier and would probably twist up the membrane as well.

The *modus operandi* is described as follows: Under local anesthesia the eyeball is firmly grasped with fixation forceps at the lower corneal border; the point of the needle is then forced through the periphery of the cornea from above on a line perpendicular to this part of its surface, into the anterior chamber. This is best accomplished by artificial light. It is very necessary to observe this direction in order that the point of the needle shall not plow between the layers of the cornea and not enter the anterior chamber at all. Considerable pressure is necessary to accomplish this and it is by no means easy to tell when the point has penetrated the cornea. When the metallic luster of the point can be seen well within the chamber, the handle should be raised to the perpendicular, and the pressure continued until the point touches the capsule, when it should be again lowered and the point forced into the membrane; then by gently rotating the needle between the thumb and fingers, as one rolls a cigarette, the capsule can usually be torn loose from its zonular attachment and will be wound around the point of the needle, from which it can be extracted through a small corneal incision on the temporal side, with a small sharp or blunt pointed hook, which is better than a forceps because it can be worked through a smaller opening. Usually little or no vitreous is lost, but the attempt to extract the capsule will not always succeed. The strength of the capsule itself may not be sufficient to withstand the traction necessary to break up its zonular attachment. In such a case the capsule will tear, some portion will come out with the hook, and the rest can usually be removed the same way, but Dr. Greene stated this is not the only operation he is trying to describe and it is only suited to the class of cases described and will fail in all others, and sometimes in these if a proper selection is not made of cases, which are described as follows: The pupil is usually dilated and displaced. The opaque capsule is a serious blemish and as great an obstruction to vision as the original cataract. No decisive operation is satisfactory in such cases, for the discission does not remove the unsightly membrane from the pupillary area.

Dr. Greene reiterated the method is open to all the objections of a traction operation and is only recommended for the class of cases that he has described, where the patient and the operator are willing to take the risk inherent in the method in order to have a blemish removed and whatever sight is left in the eye restored. Disappointment and failure will await any one who attempts to extract thin, tissue-like capsules that have not undergone inflammatory thickening. The Doctor cited a recent case in which Dr. Bonner assisted, in which all the steps of the method had been successfully carried out when the hook tore out and the capsule receded. In this case it was held by some iridic adhesion on the nasal side of the pupil. The case has since been operated on by the same method and a clear central pupil secured. Dr. Greene contends the only danger to be feared is secondary glaucoma due to the direct pressure of the vitreous on the periphery of the iris obstructing the angle when the anterior and posterior leaf or hyaloid are removed. and it is also possible that the heavier specific gravity of the vitreous under these conditions may also aid in blocking the angle and secondary glaucoma result.

Dr. Greene, in conclusion. stated that his experience with the method has been altogether satisfactory under the strict limitation that he has hedged about it. and the proper selection of cases, in addition to the carrying out of details. all of which are insisted on, and that he knows of no operation which will so well accomplish the twofold purpose for which it is recommended—restoration of cataract vision and the removal of a serious blemish from the eye.

Discussion.—Dr. Horace Bonner. of Dayton. in opening the discussion, referred to operations similar to that done by Dr. Greene. in his student days, when the capsule in its removal was wound about the point of the operating knife. and that. of course. the operation is of avail in a limited number of cases only.

Dr. Baker, of Cleveland. Ohio, described a similar operation as done in Moorfields Hospital, the capsule being removed by means of a hook. He has performed the operation in a large number of cases, but has abandoned it for the reason that in many instances it is followed by glaucoma. Recently he has substituted Dr. Stevenson's bandage, which has proved fairly satisfactory.

Dr. Clarke, of Columbus, said he has had the same experience with the operation as Dr. Baker. The difficulty arises on account of the traction which is made on the structures of the eye, producing glaucoma.

Dr. Greene closed the discussion by saying he had heard nothing new in the objections made by the discussionists and that he had discussed all of their objections in his paper.

TRI-CHLOR ACETIC ACID IN THE TREATMENT OF DISEASES OF THE NOSE, THROAT, EAR AND EYE.

E. H. Porter, M.D., Tiffin, Ohio, summed up the virtues of this drug as a very powerful escharotic in concentrated solution: a good astringent and hemostatic in weak solution, and generally useful to produce sloughing and subsequent repair of tissue where the one desideratum is quick healing, and in nasopharyngeal work the least possible chance of adhesion formation. It is made by the oxidation of chloral hydrate by nitric acid, is found pure in crystals and is best made into solution either by the addition of a few drops of alcohol (pure) for the concentrated form, or pure water for the various strengths necessary.

Dr. Porter advocates its use in the treatment of corneal ulceration, either central or marginal, where the first desideratum is to bring to a rapid termination the pathological process and then by suitable treatment bring about as perfect repair of tissue as possible with the least amount of scar formation. Various methods are in vogue, each having its own particular sphere. Many have obtained the best results by touching the ulcer after thorough cocainization and cleansing with tri-chlor acetic acid, either pure or in solution, the strength being regulated according to the size of the ulcer, the rapidity of its onset and the condition of the adjacent tissues. An ulcer found in the very early stage may often be stopped in twenty-four hours by a single application of a 5 per cent. solution, while one more advanced and virulent may need a full strength solution repeated at frequent intervals. The acid is best applied to the spot with a bit of hard wood smoothed to a moderately sharp point. Each portion of any denuded area may be touched, special attention being given to the edges. In speaking of the virtues of pure carbolic acid, tincture of iodin and tri-chlor acetic acid, comparatively considered, in a series of experiments made upon corneal tissue undergoing ulcerative changes, Dr. Porter has found the latter gave far better and quicker results in healing. He also advocates its use in phlyctenules of either the cornea or conjunctiva, in conjunction with other appropriate treatment. In traumatic kerâtitis, an infiltrated area around the wound may often be stopped by one or two applications of a 25 per cent. to 50 per cent. solution. It has also proven very satisfactory in removing brown and other stains from the cornea left after the removal of a foreign body as well as giving the additional safeguard of thoroughly cauterizing the wound, thus adding one more possible prevention from infection. For this purpose a full-strength solution is best to use and usually repair is complete within twenty-four hours.

Following the removal of pterygia, the acid may be applied pure to the denuded surface as well as to the so-called canal at the corneal scleral junction and it is sometimes necessary to repeat this procedure two or more weeks after the operation in order to remove the last traces of the old hypertrophic tissue.

It is to Professor Politzer that Dr. Porter attributes the use primarily of this acid in the repair of small perforations of the tympanic membrane after all suppurative conditions had ceased, and many old as well as recent perforations may be made to heal completely by stimulating the edges repeatedly. Delicate technique and persistent effort at repeated treatments are effective in producing a complete closure, sufficient time being allowed between the applications to permit the complete quiescence of the delicate newly-formed cell structure. Each case is a law unto itself, however. Aural polypi, when small, may be completely removed with this acid, though in many cases chromic acid will act much better.

Dr. Porter also emphasizes the value of tri-chlor acetic acid as a substitute for the electric cautery and the knife, where these can not be used, in the treatment of the various forms of rhinitis, especially the intumescent. After moderate cocainization, the application is not painful and is very effective, a large slough coming away in about five days, and the danger from adhesions is reduced to a minimum. Furthermore, the treatment may be repeated at intervals until the desired reduction of tissue is obtained. Dr. Porter cites the case of a patient who has been under his care for about six years and who presents herself for a treatment with the "hot stuff," as she calls it, twice a year and always obtains the desired relief, while for many years previous she was obliged to spend several weeks each year in the north for the relief of hay fever, but has not had an attack during the last five years.

In applying this drug to the middle turbinate, Dr. Porter makes a small incision with a narrow cataract knife and applies the acid on a cotton-wound applicator directly into the wound; while to the septum and inferior turbinate application is made only to the surface, and tissue reduced as necessary.

The Doctor says this acid must be used discreetly and with care, and here again, as in every other branch of practice, the personal factor must be considered in obtaining results.

Discussion.—Dr. Gibson, of Youngstown, said that the success in the use of tri-chlor acetic acid, as advocated in Dr. Porter's paper, was due purely to the skill of the operator, and that he would not under any circumstances attempt to use it in an eye, not being able to control its action, as can be done with the electric cautery which he uses.

Dr. Van Note, of Lima, wished to emphasize what Dr. Gibson said as to the impossibility of limiting the action of tri-chlor acetic acid and believed it should not be used in the eye.

Dr. Minor, of Springfield, said he had not used tri-chlor acetic acid in the eye, but has used it in the nose, and voiced the same objection, that its action could not be limited. He does not find it necessary to use such an agent in removing the discolorations in the cornea from steel or other foreign bodies imbedded in the cornea.

Dr. Porter, in closing, said he was glad that Dr. Gibson raised the objections he did, and that probably a great deal does depend upon the skill of the operator who uses it. A great deal of care must be exercised in its use, but by means of a hard wood applicator he has succeeded in using it with the greatest degree of success.

ANISOMETROPIA.

Wm. E. Bruner, M.D., Cleveland, Ohio.

REFRACTION; WHAT TO PRESCRIBE AFTER STATIC FINDINGS.

J. E. Cogan, M.D., Cleveland, Ohio.

The keynote of this joint paper was a plea for more frequent and greater effort in the care of these patients, to preserve or to increase the usefulness of the more defective eye. And while anisometropia strictly includes all cases in which there is a difference in the refraction of the two eyes, the essayists applied it only to those cases in which there is a decided difference, either in kind or amount. The condition is usually congenital, though there are certain acquired types from various causes. Dr. Bruner arranged these cases of anisometropia into three groups:

1. Where one eye only and always the same one is used and the other is permanently excluded, whether the vision of the other eye may or may not be improved with a glass.

2. Where good vision may be obtained in either eye and the patient may be able to use either eye separately, but binocular vision is lacking.

3. Where binocular vision can be obtained.

The Doctor calls attention to the fact that some patients with anisometropia never can obtain complete comfort, and especially is this true if the patient is a marked neurasthenic, and yet this is not surprising, as all oculists know occasionally a person possessing only a small error of refraction will fail to obtain relief from all eye-strain or become able to use their eyes to any extent. And in such eyes it is well to guard against overlooking some cause other than the eyes which is producing this asthenopia, as, for example, some pathological condition in the nares or sinuses, gastrointestinal disturbance or some uterine or ovarian trouble.

Referring to the condition of the muscles in anisometropia, the Doctor states the proportion with muscle imbalance is naturally higher in these patients than in persons whose eyes are more nearly equal. Any type of imbalance may be found, and the amount may vary from a slight degree to a well-marked squint, and very frequently there is present a combination of a vertical with a horizontal imbalance. Duane was quoted by the Doctor as having given careful analysis in regard to the presence of hyperphoria in these cases which is thought by some to occur with special frequency in anisometropia, and he found 15 per cent. of the cases of low anisometropia and 32 per cent. of the cases of high anisometropia had an hyperphoria of one degree or more.

Dr. Bruner cited 103 cases of his own where the vertical muscle imbalance is given there is orthophoria, 70 per cent.; right hyperphoria, 22 per cent.; left hyperphoria, 8 per cent.; total number of cases of hyperphoria, 30 per cent. And as regards the lateral balance of the muscles, the Doctor's cases show orthophoria, 28 per cent.; esophoria, 45 per cent.; exophoria, 27 per cent.

Regarding certain difficulties that are encountered in these cases of anisometropia, de Schweinitz is quoted as follows: "Inasmuch as the correcting lens placed at the anterior focus of the eye produces images on the retina of equal size in all forms of ametropia, no theoretical reason exists for not correcting both eyes," and Duane is quoted as saying: "If the mere difference in size and appearance of the two images is what gives trouble, we should find in this an argument for, rather than against, the correction of anisometropia, and by correcting it shall render of the same size the retinal images that before were widely unequal." Therefore, drawing the inference that this disparity between the retinal images constitutes one of the chief difficulties that exists when glasses are not worn and furnishes one of the main reasons for prescribing them. The Doctor calls attenton to another and more real difficulty due to the prismatic effect from the lenses which will set up a muscular asthenopia or even produce diplopia, and precautions must be taken to guard against this as much as possible. The subjective symptoms arising from anisometropia are as varied as in other errors of refraction and present nothing pathognomonic of the inequality. It is of the utmost importance to secure the full confidence of the patient, the condition must be explained to him with the difficulties which he will probably experience in trying to wear the glasses and consequently he should become willing to cooperate in meeting the conditions, even to the extent of enduring some annoyance and actual discomfort at first until he becomes accustomed to the glasses.

The refraction should be measured under thorough mydriasis, even at an age when ordinarily the specialist considers it not necessary to use a mydriatic, and in such patients, except in small children, the essayist prefers always to make a postmydriatic measurement before ordering the glasses, especially if for any reason it is inadvisable to give full correction. After the measurements of the eyes have been made his object is to give as nearly a full correction as possible, i. e., if one eye is hyperopic and the other myopic, he would not give an absolutely full mydriatic correction for the hyperopic eye, just as he would not do so if both eyes were hyperopic, for that would mean poor distance vision with the eye which is usually the better one for distance. The essayist contends that, while he is a firm believer in the full correction of astigmatism, he finds in these cases of anisometropia that it is sometimes necessary to give only a partial correction, especially at the start.

Gould's paper on Dextrocularity and Sinistrocularity is quoted from: "The dominant eye will preserve its dominancy despite a considerably higher degree of ametropia than that of its fellow and that an ametropia in the non-dominant eye which tends to throw it out of function is much more likely to result in non-function of that eye. For this reason it may be inadvisable to give the non-dominant an exceptional or greatly superior acuteness of vision or, in fact, even an equal acuteness of vision. Nature will not respond to the attempt so willingly as in a similar attempt upon the dominant eye." In regard to the question which eye is usually the more ametropic, the essayist quotes Schulin: "Cases of anisometropia which are not complicated with a great amount of astigmatism have the right eye less hyperopic or more myopic than the left," but the essayist contends that Duane does not agree with him and finds in the study of his statistics in this regard that the two eyes are about alike. According to his statistics, in 138 cases of non-pathologic anisometropia O. D. was more ametropic in 70, O. S. in 68, and in 60 cases of high anisometropia O. D. was more ametropic in 31, O. S. in 29. The Doctor's statistics would agree with those of Duane, as he found in the higher refractive condition (higher myopia or less hyperopia) in O. D. 45, in O. S. 45. The greater error of refraction was found in O. D. 41, O. S. 40. The better vision was obtained in O. D. 32 times, in O. S. 31 times, the higher astigmatism in O. D. 34 times, in O. S. 25 times.

In the final analysis of these cases the essayists find that many patients who could obtain no relief without glasses, or with glasses which either did not recognize the difference between the two eyes or corrected it only partially, are relieved of their symptoms, both ocular and reflex, by the glasses which correct the inequality between the two eyes. The Doctor's statistics in this regard, in 113 cases, are as follows:

No attempt made to correct the inequality	3
Tried and gave up the attempt	3
No help	2
Doubtful	3
Partial relief	11
Greatly benefited	91

The paper concludes with the statement that we are warranted in making the plea urged at the beginning, that a greater effort be made in cases of anisometropia to correct both eyes, as in so doing not only can many so-called useless eyes be preserved from further deterioration of vision and be made to see and to share more or less in the work of the better eye, but the patient can be made more comfortable and relieved of ocular distress, headaches and other reflex disturbances.

Discussion.—Dr. W. P. Chamberlain, of Cleveland, in opening the discussion of this joint paper, spoke as follows: The subject the speaker has brought to our attention is an important and practical one. It is a subject that is given too little attention in our medical associations and in text-books on ophthalmology. The tendency is to discuss and report the rare things to the exclusion of the more practical.

What shall we prescribe after having determined the static refraction? This is the difficult part of refraction, the part that requires judgment based upon experience. The determination of the static findings is more or less mechanical.

I think the speaker has done well to emphasize the fact that in determining refraction under a mydriatic we are not dealing with a ciliary muscle with normal tone, but with a paralyzed muscle, and that the tone of that muscle, when the effect of the mydriatic passes off, will depend upon whether the eye is hyperopic or myopic.

In cases of hyperopia and hyperopic astigmatism of moderate and high degree, in young patients, I think it is often better to make considerable reduction in the spherical correction, especially if the patient has never worn glasses. A person, for example, of 20 years, has static correction of + 3.50 D. sph. $\overset{\frown}{\smile}$ + .50 D. cyl. axis 90°.

If there is no squint, I would not prescribe over + 1.75 D. or 2.00 D. sph. with full cylindrical correction. At the age of 20 years there is an accommodation of 10 D., and with a ciliary muscle that is hypertrophied he would be well able to take care of 1.50 D. of hyperopia. It is the astigmatism that usually causes the symptoms of asthenopia. The patient would probably need the strength of his lenses increased after a time, but I prefer to give them a glass at first that will relieve his symptoms and that he will wear. As the age increases, of course, a larger proportion of the hyperopia should be corrected. I have found regarding astigmatism that if the patient has never worn glasses and the cylinder is high, it is often advisable to make reduction in strength for the first pair of lenses.

In myopic cases the all-important thing is not to over-correct, causing a weak muscle to accommodate.

It is in the cases of mixed astigmatism that I am most at loss to know what to prescribe. It seems as if each case must be considered by itself and that no general rule can be formulated. In cases where the hyperopia predominates I treat them as hyperopic cases, and so with the myopic cases, but find many cases that are puzzling. I trust some of the more experienced men will give us the results of their experience in this class of cases.

Dr. John E. Weeks, of New York, in discussion on these thoroughly practical subjects, said we all have a larger income from treating errors of refraction than from our operative work. The Doctor said: "There are some things that have impressed me in regard to anisometropia that I may allude to. One is we get nervous disturbances in the nature of a tic without much pain." The Doctor has a number of cases on his records where spasm of the orbicularis is developed and in which the patients have been unable to use one eye for a few months until the spasm is abated, and they have been relieved by correcting the anisometropia.

The next paper was a demonstration by Dr. Walter C. Hill, of Cleveland, of

SWEET'S INSTRUMENT AND METHOD OF LOCALIZATION OF FOREIGN BODIES IN THE EYE.

Discussion.—Dr. John E. Weeks, of New York, opening the discussion, said the principle involved in the location of foreign bodies in the eye is that of finding the location of an unknown body in relation to that of a known body, on three planes—a horizontal and two vertical planes. At the New York Eye and Ear Infirmary a few years ago they obtained the apparatus of Mackenzie Davidson which he is now using in Moorfields Hospital in London. The Doctor uses, in addition to the head rest, the cross-thread localizer, which takes the place of the little markers of the Sweet instrument.

Dr. Hulin, now in San Francisco, uses a head rest which permits the patient to sit upright instead of resting in the reclining position, but there is more chance for error in this method unless the position of the head is exactly correct. It is the duty of every surgeon, as far as possible, to have a picture taken before he attempts to remove a foreign body. The object of the ophthalmologist is to preserve to the patient as much vision as possible and he should plan his operation and remove the body with the least possible trauma to the patient. If he uses a magnet without perfect knowledge of where the foreign body is he may do a great deal of damage, but if he operates with an intelligent knowledge of where the body is located he may preserve useful vision.

Dr. Baker, of Cleveland, emphasized the importance of making a picture in every instance, and the magnet should not be used to determine whether or not there is a foreign body, because you will thereby destroy the vision. He always uses a photograph in preference to the negative, because things are brought out in the photograph that do not appear in the negative.

Dr. Gibson said that one should have a photograph made in every instance and not rely upon the statement of the *x*-ray operator as to the presence of the foreign body in the eye. A lamentable experience in one instance had determined him to always demand a photograph.

Dr. Hill, in closing, said that a man who had a great many *x*-ray negatives will make more out of a negative than from the print, because a very small object will not show in the dark print where it would show as a light spot clearly in the negative.

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

Dr. Henry O. Reik, of Baltimore, sailed for Europe July 18.

Dr. J. F. Borsch, of Philadelphia, sailed for Europe July 16.

Dr. Wilhelm Lohmann has qualified for ophthalmology in Munich.

Dr. Downs, of Douglas, Arizona, is doing postgraduate work in ophthalmology in Chicago.

Dr. R. Weinberger has located in Mülhausen, Germany, where he will practice ophthalmology.

Dr. Pfalz has been made Privatdocent in Ophthalmology in the Academy of Practical Medicine, Düsseldorf.

Dr. Arthur Brückner, Privatdocent for Ophthalmology at the University of Würzburg, has resigned.

Dr. John O. McReynolds, of Dallas, Texas, has been made a member of the Board of Health of that city.

Dr. Thomas A. Woodruff, of Chicago, spent the month of August motoring in the New England states.

Dr. Frank Allport, who spent the summer visiting the principal European clinics, has returned to Chicago.

The State Eye Hospital at Mülheim, Germany, was opened July 4, with Dr. Stuelp as chief and Dr. Wirtz as assistant.

Dr. Josef Helborn, Privatdocent for Ophthalmology in Berlin, Germany, has received the title of Professor of Ophthalmology.

DR. CHARLES J. KIPP, of Newark, N. J., has resigned his position on the Board of Managers of the State Sanatorium for Tuberculosis.

DR. WALTER PARKER, Professor of Ophthalmology in the University of Michigan, has resigned his chair to devote his time to private practice.

DR. CHARLES A. OLIVER, of Philadelphia, is spending his vacation at his new ocean camp, "Manshope," at Oak Bluffs, Mass., sailing and motor-boating.

PROFESSOR DR. EDMUND HANSEN GRUT, Professor of Ophthalmology at the University of Copenhagen from 1888 to 1896, died recently, aged 76 years.

DR. STIEREN, of Pittsburg, announces the removal of his office from the Westinghouse Building to his residence, 3603 Fifth avenue, opposite Meyran avenue.

MR. SYDNEY STEPHENSON, of London, England, editor of the *Ophthalmoscope*, has received the Middlemore prize of the British Medical Association for his essay on ophthalmia neonatorum.

DR. H. M. CUNNINGHAM, of Marquette, Michigan, visited Chicago recently, making preparations for a year's postgraduate work in Europe. Dr. Cunningham was in search of a *locum tenens* to care for his practice in his absence.

AN "optometry" bill passed the New York State Legislature during the session that closed in June last, but Governor Hughes has vetoed it. "Optometry," therefore, in that state, has failed to become a legalized "profession" up to the present time.

GOVERNOR STUART has approved the appropriations made by the Pennsylvania Legislature, among which was an appropriation of $35,000.00 for the Eye, Ear and Throat Hospital, of Pittsburg. The Philadelphia Institution for the Blind received $93,500.00, and Wills' Eye Hospital, Philadelphia, $60,000.00.

The Public Health Defense League, which originated in New York City, and which numbers among its members many men prominent in the various professions, has established a branch society in Buffalo, New York. The society is doing excellent work in exterminating abortionists, quacks, etc., and purposes enlightening the general public on the evils of self-dosing.

Paris, July 31.—Dr. Fortin has reported to the Academy of Science a new contrivance which, he believes, is to be of great service in eye diagnosis. The physician found that the light from a mercury vapor lamp, passing through two sheets of blue glass and reflected into the eye by a large lens, reveals the internal condition infinitely better than the ordinary white light. By placing a screen with a pinhole between the light and the eye a magnified image of the vessels of the back of the retina, which have hitherto been almost invisible, has been obtained.

The John Crerar Library announces that arrangements are in progress for the accommodation of its Department of Medical Sciences as part of its main collection at 87 Wabash avenue, northwest corner of Washington street, where it will be made available, at least in part, on and after August 19. The rooms now occupied in the Newberry Library Building will be closed after August 3, and all mail matter should be addressed hereafter to the John Crerar Library, Chicago, Ill. Packages sent by express should have added sixth floor, 87 Wabash avenue.

The Chicago Eye, Ear, Nose and Throat College has purchased the property known as 204 East Washington street. This property adjoins the present site of the college and will give a frontage on Washington street of 40½ feet and a depth of 80½ feet on Franklin street.

It is proposed in the near future to build a new building occupying both the old and new sites. The building will be an eight-story fireproof structure with a forced draft ventilating system, and will be up to date in every respect for the accommodation of the teaching and hospital departments of the College.

During the erection of the new building there will be no interruption of the business of the institution, as one-half will be erected and occupied while the other is being gotten ready.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

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Original Articles.

A CASE OF PULSATING EXOPHTHALMOS. LIGATION OF THE COMMON CAROTID. DEATH.*

EDWIN E. JACK, M.D.

PATHOLOGICAL REPORT.

FREDERICK H. VERHOEFF, M.D.

(Illustrated.)

E. M., female, aged 53. Four days before entrance into the hospital she struck her right temple against a door. The injury was so slight that the skin was not broken; no attention was paid to it, and she continued her shopping tour in the city. Two days later there was noticed some swelling of the lids and tissue around the eye and an exophthalmus, which was increasing. For two days there had been vomiting at frequent intervals and dizziness, no chills. She suffered much from a terrible noise in the head, which came on simultaneously with the other symptoms, and which the patient said was worse "than could be made by all the engines in the city." Examination: Face wears an anxious expression and patient is frightened. She sways from side to side in attempting to walk alone; there is moderate prostration. The lids are chemotic and the tissue around is swollen. Decided exophthalmus, pulsation is marked and can readily be seen and felt. A distinct bruit is heard with the stethoscope over lids or temple, and it, as well as the pulsation, is relieved by pressure on the carotid. Pressure over the eyeball gives some, but not so marked relief. The conjunctiva is moderately injected, the cornea clear except for an old scar. Iris is of good color, but pupil does not react, the fundus can not be seen, although there is good red reflex. A pressure bandage was put over the carotid. The following day after a restless night the exophthalmus and swelling around the eye were increased, the conjunctiva was chemotic and serum was forced through it: the pain was intolerable. In the afternoon the right common carotid was tied by Dr. H. H. Germain, with the effect of immediately stopping the pulsation and bruit. The exophthalmus diminished slightly. Difficulty in swallowing followed the operation, but there was no change in pulse or respiration. The next day there was hemiplegia, probably due to ischemia; there was also delirium, which persisted with few normal intervals till the end. A general examination made by Dr. W. H. Smith revealed nothing but moderate cardio-vascular disease. There was a general improvement in the eye symptoms, but the general condition grew worse and the patient died about four weeks after the operation.

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* Read before the American Ophthalmological Society.

PATHOLOGIC REPORT.

Autopsy seventeen hours after death. Head only allowed. Body that of a well-nourished female. Rigor mortis. Lividity of dependent parts. No postmortem decomposition. No chemosis of lids or conjunctivæ. No exophthalmos. On right side of neck there is a linear scar of operation (ligation of common carotid).

Dura normal. Pia markedly edematous. Cerebrospinal fluid clear, increased in amount. The right cerebral hemisphere is noticeably larger than the left, evidently due to edema. On section the brain shows no macroscopic lesions.

The right internal carotid artery is decidedly dilated at its exit from the cavernous sinus and has greatly compressed the optic nerve against the upper wall of the optic canal. On section of the nerve at this point it is found to measure 3.5 mm. by 6 mm. in size and to show a central oval area measuring 2 mm. by 3 mm. The latter is white and opaque and consists of friable material, evidently an area of degeneration produced by pressure of the artery. On the left side the carotid artery is not noticeably dilated, but the optic nerve is slightly compressed, measuring 4.5 mm. by 5.5 mm. in cross section, and showing several minute white spots toward the artery near the periphery. The circle of Willis shows no appreciable difference in the calibers of its vessels on the right and left sides.

At the site of the right cavernous sinus the dura is bulged out and pressure on the swelling forces blood out of the internal carotid artery at its exit from the sinus. On lateral cross section through the middle of the cavernous sinus, after hardening in formalin several days, there is found a large sacculated aneurism communicating anteriorly with the carotid artery by an opening 3.25 mm. in diameter (Fig. 1). The aneurism is roughly ovoid in shape, measures 8 mm. by 10 mm. and is free from thrombi. It has greatly compressed but has not entirely obliterated the cavernous sinus. Its wall in most places is about the thickness of that of the artery proper, but posteriorly over a small area it is extremely thin, friable, and shows a small irregular opening into the cavernous sinus 0.5 mm. in diameter.

The cavernous sinus on the left side is absent and is replaced by a single small vein in continuity with the ophthalmic vein. The other venous sinuses are normal.

Histologic Examination.—Fixation in formalin, Zenker's fluid, by Weigert's method for myelin sheaths, and by Marchi's method. Sections made of the internal carotid artery on each side, of each optic nerve in its exit from the canal, and of the right optic nerve at intervals along its entire course. Sections also made of the orbital tissue and of the posterior part of the right eye.

Both carotid arteries show the changes characteristic of advanced nodular arteriosclerosis, namely, proliferation and degeneration of the intima with fragmentation of the elastic tissue and atrophy of the media.

Sections of the right optic nerve at the exit of the canal, prepared by the Weigert method, show a narrow rim of atrophy all around the periphery, and in the center a large oval area of complete degeneration (Fig. 3) in which the nerve fibers have entirely disappeared and which is markedly infiltrated with fatty granule cells. In sections near the globe the degenerated area changes its shape and position, becoming more or less sector-like and occupying the lower outer part of the nerve (Fig. 4). The degenerated portion of the nerve is thus confined almost exclusively to the papillomacular bundle. In places, especially near the globe, Mallory's connective tissue stain shows the degenerated bundle almost entirely replaced by fibrous tissue. Sections stained by Mallory's neuroglia method show a complete absence of neuroglia within the degenerated area, but some neuroglia proliferation at its periphery.

The left optic nerve also shows a narrow rim of peripheral atrophy, but no degeneration of the papillomacular bundle. There are, however, near the periphery below four small bundles which show beginning degeneration.

The central retinal vessels show an increase in their adventitia and a certain amount of sub-endothelial proliferation, but not sufficient to obstruct the circulation to any extent.

The orbital tissue is congested and shows numerous epithelioid cells filled with pigment that fails to bleach by the method of Alfieri—blood pigment. There are, however, no hemorrhages to be seen. The fat droplets in the nuclei of the fat cells are unusually large and often multiple.

The retina shows complete disappearance of the layer of ganglion cells, both in the macular region and elsewhere, and atrophy of the nerve fibers. There is only slight edema. The retinal veins and capillaries are greatly congested. One small retinal hemorrhage is found after a long search. Many of the retinal vessels, especially the larger, show marked fibrosis with some sub-endothelial proliferation.

The chorioid is markedly congested and in places shows proliferation of phagocytic epithelioid cells, many of which are packed with blood pigment.

Pathologic Diagnosis.—Aneurism of right internal carotid artery with recent perforation into cavernous sinus—arteriovenous aneurism. Edema of right cerebral hemisphere. Compression of right optic nerve by sclerotic carotid artery with degeneration of papillomacular bundle.

There have been about 260 of these cases reported, the first in 1805, and this case, I believe, is the thirty-third in which an autopsy has been made. It is also the seventh case in which the presence of a rupture of the carotid into the cavernous sinus has been absolutely proven, this being the lesion which most authors agree is the one probably most often present in intracranial cases. The results of the autopsies are as follows: Aneurism of the ophthalmic artery in the orbit, 2 cases; aneurism of the same before its entrance into the orbit, 1; rupture of the carotid artery into the cavernous sinus, 7. To this number, however, may be added 3 cases reviewed by Sattler and one reported by Brandes, in which the same was practically demonstrated. Sattler thought it probable that 2 others also in his list of 19 autopsies were of this kind. Considering the difficulty in demonstrating this lesion, which Dr. Verhoeff assures me is really great, it is easy to believe that in these cases of Sattler and in others a slight rent in the artery may have been overlooked. Aneurism of the internal carotid was present in 3 cases, and in another the wall of the carotid was found very much thinned, but no rupture demonstrated. Tumors caused 5 cases and internal hydrocephalus and orbital encephalocele one each, and in one there was a communication between some branches of the ophthalmic artery and the sinus. In 6 no aneurism or arterial lesion was found.

In the present case I think it may be considered without question that the aneurism of the carotid had existed long before the rupture into the sinus and that it was spontaneous. There is little doubt, too, that the slight injury was sufficient to produce the rupture in

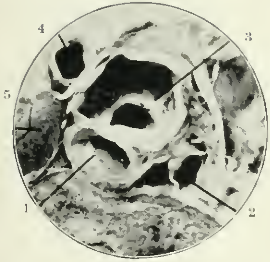

Figure 1.

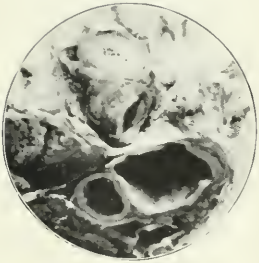

Figure 2.

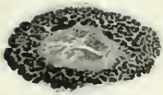

Figure 3.

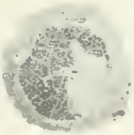

Figure 4.

the already thinned and diseased artery. There has been some controversy as to whether an aneurism alone of the carotid could cause the symptoms of pulsating exophthalmus. Rivington, in 1896, made the statement that true pulsating exophthalmus could not be caused by a circumscribed or fusiform aneurism of this vessel and that the symptoms appeared only if the artery ruptured and the blood entered the veins. A statement similar to this is made by Bull in Norris and Oliver's work, that in no case of aneurism of the carotid in the cavernous sinus which came to autopsy were there any signs of venous stasis, exophthalmus or pulsation during life. LeFort, however, in 1890, gave as an opinion that aneurism of the ophthalmic artery, aneurism of the carotid in the cavernous sinus and rupture of the carotid into the sinus, all gave identical symptoms. He also suggested as a means of diagnosis the character of the bruit, the existence of a "bruit de soufle," continuous, with exacerbations, being in favor of a rupture into the sinus. Barnard and Rugby, too, in 1904, reported an autopsy on a typical case, in which there was a double sacculated aneurism in the intracranial course of the carotid, but without any communication with the sinus and without noticeable dilatation of the sinus or ophthalmic vein. They, therefore, concluded that such an aneurism could in itself cause the symptoms of the disease. The very large aneurism in our own case seems to have given rise to no symptoms whatever.

Another point of interest is the treatment of these cases. In the whole number of reported cases the common carotid has been tied either as the only method of treatment or secondarily in about 125 cases. Stomann's figures in 1898, referring to 95 cases, are: cured, 51 per cent.; improved, 17 per cent.; unimproved, 17 per cent., and died, 10 per cent. Reuchlin, in 1902, gives: recovery, 68 per cent., meaning by recovery probably both cured and improved, and in this way his figures agree with Stomann's: No result in 21 per cent. and death in 9 per cent. Cases reported since that time do not change these figures to any extent. There have been at least 10 cases in which both carotids have been tied. In comparison with the results of ligation may be put those from compression. Stomann reported healing in only 8 out of 53 cases, and later, in 1902, Reuchlin gave 22 per cent. of recovery from the same treatment. There have been in the neighborhood of 21 spontaneous recoveries. Most writers advise ligation of the carotid as the best method of treatment, but there has been some dissent from this on the ground that there are these spontaneous recoveries, that there are cases on record in which physical signs and symptoms of pulsating exophthalmus have existed a long period without marked effect on the well being of the patient and with but little danger to life, that there is often a recurrence of symptoms after ligation, and that there are dangers of sepsis, hemorrhage and cerebral complications from the operation. One who has had the writer's experience in ligation of the carotid naturally welcomes any other procedure with less attendant danger. Compression offers too little hope of success. The later recommendations of Sattler and of Schwalbach are, therefore, interesting. Both these writers report cures by ligation and resection of the superior ophthalmic vein. Schwalbach's case had previously had ligation of the carotid without result. Dollinger had a still more interesting case. After an interval of a month ligation of the second carotid followed the first, and ten weeks later, there being a return of symptoms, Dollinger tied off some of the small veins and resected about half an inch of enlarged and thickened superior ophthalmic vein. The patient was discharged cured in thirteen days. Woodward did a similar operation following ligation of the common carotid, and Golowin has done the same. The cure seems to come from thrombosis spreading from the seat of ligation backward. It is recommended that this procedure be adopted before ligation of the carotid, certainly before tying the second one in event of failure with the first.

In this connection I would like to mention briefly and put on record another case of my own: A. T., male, aged 54. Patient was thrown from a bicycle, striking on the left side of his head, and was unconscious for twelve hours. Two days after there was a loss of outward motion in both eyes, which disappeared at the end of a week, to be followed by an exophthalmus of the right eye, accompanied by a loud noise in the head, which was most marked in the right ear. There was also a dull ache in the vertex and occipital region and some nausea. Examination about four weeks after the injury showed exophthalmus and immobility of the right globe, lids swollen and livid and the lower part of the conjunctiva chemotic. Pupil, iris and cornea normal. Vision, fingers at 20 feet. Congestion and tortuosity of retinal veins. Pulsation felt and heard through upper lid. The eye symptoms became rapidly worse, and three days later he was operated on by Dr. S. J. Mixter. The operation consisted in making deep incisions into the orbital tissue above and below through the lids and there was profuse hemorrhage. The cornea ulcerated and sight was lost, but the other conditions gradually mended. There was a little later a slight recurrence, but it was followed by further improvement. At this time a bowel trouble came on, lasting some time, but finally, about three months after entrance, he was discharged. There was still some injection and chemosis of the lower part of the conjunctiva, but it was rapidly diminishing; there was little or no exophthalmus and no pulsation, a cure with loss of sight.

There can be but little doubt, I think, that the cure in this case was brought about in the same way as in the cases of ligation and resection of the orbital veins, the free division of the vessels and bleeding from them leading the way to thrombosis and this extending backward. I should be inclined on another occasion, if the character of the bruit suggested a rupture or if there were evidences of much stasis or enlargement of the orbital vessels, to try the effect of tying and resecting them, especially if the patient was not young and the case was a spontaneous one. The applicability of this procedure to our first case, however, in spite of the presence of a moderate extent of these indications, is doubtful. It seems as though it could have had but little lasting effect.

SOME EUROPEAN EYE CLINICS AND THEIR CLINICAL OPPORTUNITIES. HAMBURG, KONIGSBERG, BERLIN AND PRAG.

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CHICAGO.

Realizing that the majority of physicians going to Europe for the purpose of specializing in ophthalmology have, except perhaps in regard to Vienna, great difficulty in obtaining satisfactory information as to the places to be visited, the location and hours of the clinics, the time to be spent there and the expenses incurred, I take the liberty of presenting this article and hope that, in a small way at least, it will help to satisfy a pressing need.

In my capacity as Secretary of the American Medical Association of Vienna I am continually receiving letters asking for information of the kind just referred to, and, as the time required to answer them fully by personal letter would seriously interfere with my regular work, I take this means of replying through the OPHTHALMIC RECORD, recording only my personal observations and omitting such data as can be more satisfactorily obtained in Baedaker or some similar guide.

In visiting various places I have borne in mind two purposes: first, to learn as much as my time permitted by taking special courses and attending the clinics, and, secondly, to become personally acquainted with those men who stand foremost in ophthalmic science, so that when hereafter I read an article by one of them I may better appreciate his work from a more intimate knowledge of his environment, the material at his disposal, his methods and his personality.

HAMBURG.

Prof. Deutschmann, whose work on the detachment of the retina and in other ophthalmic subjects has awakened general interest, is practically the only man to be visited. He can be seen daily from 12 to 1 o'clock at the Polyklinik of the Isrealitisches Krankenhaus on Eckernforder Strasse, St. Pauli. Prof. Deutschmann is very friendly to Americans and takes pleasure in demonstrating his cases and his methods. It might be of interest to mention that, among others, I saw a man who had been totally blind since early childhood on account of almost complete detachment of both retinæ. Prof. Deutschmann has operated on him at intervals for about two years, twenty or more operations in all, and at present the patient's form sense has so improved that he is able to go about alone and use the street cars. Prof. Deutschmann's results in the operative treatment of retinal detachment are better than those of the men I have since interviewed. An invitation to his private hospital, Magdalena Strasse 50, street car line 19, is readily obtained. Here the professor operates every Saturday at 1:15 p. m. on fifteen to thirty patients. On the morning I was present he operated on nine cases of detachment of the retina. Another place of general as well as special interest is the Eppendorfer Krankenhaus, of which Prof. Manhard is ophthalmic surgeon. The number of cases varies greatly. The ophthalmological department is large and thoroughly up to date in all its appointments. The Krankenhaus itself has 2,000 beds, and the various departments have, each, its own building or barracks. It can easily be reached by car line No. 1, and, as the general plan and equipment compare favorably with the new Virchow Hospital in Berlin, one should not leave Hamburg without inspecting it.

As no instruction is given in Hamburg, a three days' stay is amply sufficient if a Saturday for Prof. Deutschmann's private clinic be included.

A hotel convenient to the Central Railway Station is Hotel Graf Moltke, Steindamar 1. Another more centrally located and especially to be recommended in summer, on account of its location on the Jungferstieg, the Hamburger promenade, is the Hotel Streit.

BERLIN.

Berlin, contrary to the prevalent idea that it does not pay the ophthalmologist to spend some time there, presents good opportunities for bacteriological, pathological and clinical work. The first two can best be studied at the Charité, where Prof. Greeff is willing to give a combined laboratory and clinical course for fifty (50) marks per month. Clinical instruction is given in his Polyklinik. Prof. Greeff showed me some beautiful microscopic eye specimens, prepared according to a new process, whereby the original colors of the tissue are preserved indefinitely. The clinic is thoroughly equipped and is open from 10 to 12 a. m.

The largest amount of material and the largest operative clinic is seen at the Königliche, Augenklinik, Siegel Strasse, No. 5. This is conducted by Prof. von Michel, aided by first (1st) assistant, Prof. Dr. Helbron, and fourteen minor assistants. Here 17,000 patients are treated during the year, many of the severer cases being sent from smaller clinics on account of their lack of hospital accommodations.

Geheimrath von Michel operates every morning on eight or ten cases, after which Prof. Helbron continues the work. Both gentlemen are rapid and skilful operators and visitors are always welcome. From 11 to 12 a. m. Prof. von Michel holds a clinical lecture, which is part of the regular university course. Here the most interesting of the patients are presented and fully discussed, the histological changes in each case being demonstrated by means of the stereopticon. To one visiting the operative clinic, attendance on these lectures is practically obligatory, as an invitation is always extended and an acceptance expected. The advantages offered amply repay one for the time spent.

In the Polyklinik, the assistants thoroughly examine and measure the refraction of each case and keep very complete records. The external cases (as well as patients presenting themselves for the first time) are inspected in the treatment room, and it is here that external eye diseases can be most satisfactorily studied, as the visitor is always welcome to examine any case that may interest him.

Foreign physicians, who speak German, can obtain an assistantship, when such a position is vacant, by applying personally to Prof. von Michel and by pledging themselves to remain at least one of the two years' service. As a rule, however, German physicians receive the preference and it is seldom that a foreigner is chosen.

Prof. Silex has his private hospital at Karlstrasse, No. 30, and his Polyklinik just across the street. At the latter place a course in ophthalmology and refraction can be had and material is abundant. In number of patients, he is said to have the fourth largest clinic in Berlin. Silex operates at the hospital every day at 9 a. m. and attends the Polyklinik daily from 11 a. m. to 1 p. m.

Geheimrath Prof. J. Hirschberg, known to us on account of the large number of his scientific contributions, and personally known to many through his American visits, is still the foremost ophthalmologist in Berlin. He is a severe critic of our haphazard way of keeping clinical records, and emphasizes his remarks by showing histories kept up for over thirty years, with at least one complete reexamination yearly.

Professor Hirschberg's private Polyklinik, Karlstrasse 36, is open daily from 1:30 to 4 p. m., and here are treated from 6,000 to 8,000 patients yearly. There are two regular and two volunteer assistants. These make very complete records and treat the milder cases. All the severer cases and those coming for the first time are examined by the Professor himself. Professor Hirschberg takes great pains in demonstrating all of his more interesting cases and allows them to be examined in the adjoining dark room.

All Americans can be assured of a most cordial and hearty welcome, and, if they so desire, can work in this clinic. Professor Hirschberg has lately taken a partner, so as to relieve himself of a part of his large practice, and is now building a thoroughly modern Polyklinik and Hospital on the site of the old one, which has been removed.

There is also in course of construction in the grounds of the Charité, a new klinik and hospital for Professor Greeff.

The Ophthalmological Society of Berlin, of which Professor von Michel is president and Professor Hirschberg vice-president, meets once each month in the former's lecture room in the Königliche Augenklinik, and all visitors can be assured of a cordial welcome. The papers presented are of a highly scientific character and, to a large extent, represent original work.

The Anglo-American Medical Association of Berlin meets every Saturday evening at the Restaurant Heidelberg, and here the visitor is likely to find some one who can give him information as to clinics, courses, etc., although the society is not as yet so well organized as the one in Vienna. The secretary's address is care of Rothacker's Buchhandlung Friederichs Strasse, 105 b.

While in Berlin the visitor should not neglect to visit the new Virchow Krankenhaus. It is best to go in the morning, so as to witness the operative work. In area the grounds are somewhat smaller than that of the Eppendorfer Krankenhaus in Hamburg, after which the general plan of this hospital is patterned. The hospital consists of a series of barracks, each containing two wards of twenty-two beds each, four private rooms for the more serious cases, two dining-rooms, pantry, sterilizing-room for linen and clothing, as well as two bath and two toilet rooms, one of each at either end of the barracks. Kitchen, laundry and machinery has each its separate building.

The materials used in construction of the hospital are cement, iron and marble, wood being used only for doors, window casings and stairways. In the interior, everything, except the marble and tile, is protected by white enamel. There is electric ventilation, and the sanitary appliances are perfect. There are arrangements for sterilizing all bedding, towels, clothing, etc., before they leave the barracks to be taken to the laundry. The number of beds is 2,000, although more than double that number can be placed in case of necessity.

Dr. Fehr, Professor Hirschberg's former assistant and one of the most able ophthalmic surgeons in Berlin, has charge of the ophthalmological department.

The eye clinics of Berlin are all within a few minutes' walk of each other and rather centrally located. The chief criticism from the visiting students' standpoint is that, with the exception of Professor Hirschberg's, all of the eye clinics are held between 10 and 12 a. m., so that only one clinic can be visited in the morning and one in the afternoon, in all three to four hours' work per day, the rest of the day being practically lost as far as work is concerned.

Berlin offers very little to the beginner in ophthalmology. The student of ophthalmic preliminaries had better go elsewhere first, as there are usually too few foreign students to form a class of any kind, so as to make it worth the while for any of the professors or assistants to give a special course. However, during the vacation months of the university, March and October, special introductory courses (Ferien Curse) for visiting physicians are given and it is well to time one's visit accordingly. The tuition fees are somewhat higher than in Vienna.

Living expenses in Berlin are not as cheap as reports expect one to believe. Hotels charge three (3) marks and up per day for rooms, and meals average 1.50 and 2.50 marks. Pension can be had for 125 to 175 marks per month. Many students rent a room and take their meals when and wherever convenient. The expense is about the same as pension, since light, heat and laundry are extra charges.

For a short stay, the Hotels Bauer, Central or Terminus, with rooms from three (3) marks up, are centrally located. More expensive are the Hotels Metropole and Kaiserhof. Restaurant Terminus, opposite the Friederichstrasse Bahnhof, and Restaurant Leopold, Karlstrasse 31, are favorite resorts for students and very reasonable in their prices. There are numerous pensions in the immediate vicinity of the hospitals.

KÖNIGSBERG.

Situated in northeastern Germany and out of the route of general travel, Königsberg, made famous in the ophthalmic world by Kuhnt and his work in trachoma, is worthy of a visit extending over several days.

The Königliche Augenklinik is a large, spacious hospital, built almost in the center of the city at Wagnerstrasse, No. 5. Here are treated over 6,000 patients yearly, and the territory controlled by it is large, Berlin being the nearest competitor.

The control and treatment of trachoma interested me most, and I learned to appreciate how Professor Kuhnt has been able to eradicate the disease to such an extent that an old and severe case is now comparatively infrequent. He induced the government to appoint competent physicians taught by himself, as district examiners, and these make regular periodic inspections of the territory assigned to them, visiting dwellings as well as schools. Whenever a suspected case of trachoma is found, it is sent to Professor Kühnt's clinic and by him referred to the "*Granulose Haus*" to remain there or to be treated as an ambulatory case as circumstances dictate. The government defrays all traveling and hospital expenses. This compulsory treatment is the salvation of northeastern Germany (once a hotbed of trachoma) and is a lasting monument to its originator. The *Granulose Haus* is at Butterberg, No. 5, about three minutes' walk from the Augenklinik, and two assistants attend daily at 10 a. m. to treat the interned and ambulatory patients and to do necessary minor operations. The building itself is almost new and has a modern equipment.

The Augenklinik has its hospital on the second floor, and here all the more serious operations are performed. The operating room is painted black, as Professor Kuhnt operates by artificial light with condensers. After the operation the patient is lifted from the operating table directly onto his bed, which has been rolled into the operating room. Professor Kuhnt uses his conjunctival flap method after corneal incisions or wounds, and it has many decided advantages.

After the operations at 10 a. m., there is a practical clinical course for university students. Each student is given a case which he must thoroughly examine objectively and then demonstrate before the class—an ideal method for more advanced classes. From 11 a. m. to 12:30 p. m., there are more operations, or a visit may be made to the *Granulose Haus*.

The day before my arrival in Königsberg, Professor Kuhnt signed a contract to succeed Professor Saemisch at the University of Bonn, and, as he expressed himself, he felt rejuvenated by the proposed change. This position had been his goal for years, and he spoke about it and his future work with the greatest enthusiasm.

At this period a word about Professor Kuhnt's medical career might be of interest.

After pursuing his medical studies at Bonn, Berlin and Würtzburg, he was for one year assistant to Professor Merkel in Rostock. From there he went to Heidelberg, where he specialized in ophthalmology under the able instruction of Professor Otto Becker. In 1881 he was appointed Professor Extraordinarius of Ophthalmology and Director of the newly instituted Augenklinik at Jena. The following year he was advanced to the position of Professor Ordinarius, and as such occupied the chair in Jena until the fall of 1892, when he was called to fill a similar position at Königsberg. In the meantime, in 1899, he founded *Die Zeitschrift fur Augenheilkunde,* and in 1905 he was presented with "Unger Preise" for his invaluable work in the therapeutics of trachoma. He was in Königsberg for over fourteen years, and he feels that the new field for work is necessary to reawaken his ambition. In every place I have since visited, the various men have expressed their satisfaction that so able a man as Professor Kuhnt has been chosen to fill the place made famous by Saemisch, a place second to none in all Germany, and Professor Kuhnt is, indeed, to be congratulated. He is a man in his best years, open minded and full of tremendous energy, and no one who sees him can doubt that his best contributions to ophthalmic literature are yet to come.

Since writing the above I hear that Professor Krüchmann, of Stuttgart has been appointed to succeed Professor Kuhnt at Königsberg.

Living expenses here are about the same as in Berlin. The Bahnhof Hotel, opposite the railroad station, is to be recommended only during the warm months, as it is quite remote from the hospital and it can not be considered an especial pleasure to ride for fifteen to twenty minutes in an unheated street car, with the mercury at 10° below zero. A hotel conveniently located in the center of the city and within a few minutes' walk of the hospital is the Berliner Hof. Rooms can be had there from 3.50 marks up, but must be engaged some days in advance, as this hotel is generally full.

PRAG.

On account of the recent death of Professor Czermak, the ophthalmological department of the German University at Prag has been for some time practically at a standstill. It can safely be predicted, however, that within a short time it will have regained all of its former prestige, as no less a man than Professor Elschnig, of Vienna, has lately assumed charge there. Professor Elschnig goes to Prag with the prestige of a wide experience acquired by his association with Professor Schnabel, first in Graz, and later in the Allgemeines Krankenhaus in Vienna. He is a man in the early forties and full of ambition and energy. His faculty as a teacher is generally recognized, and the eagerness with which American students in Vienna sought his courses is one of the best proofs of his ability and popularity. Professor Elschnig was until his departure for Prag President of the "Ophthalmologische Gesellschaft" in Vienna. It is to be hoped that after he has firmly established himself in his new sphere of work American students will visit him in sufficient numbers to enable him to continue his English courses. It is generally taken for granted that upon Professor Schnabel's retirement, eight years hence, Professor Elschnig will be called to Vienna to fill his place.

The eye clinic occupies a large, spacious building, is well equipped, and is supplied with an ample number of beds.

No special courses in ophthalmology for visiting physicians are given, as they are never sufficient in number to form a class. Professor Alfred Kohn, of the Anatomical Institute, is willing to give courses in the embryology and histology of the eye.

The expenses are slightly less than in Germany. A room in a good hotel costs from 3 to 5 kronen; meals from 2 to 3 kronen. The Hotel Monopol, opposite the railway station, is very convenient. Slightly more expensive, but more centrally located, on the Graben, is Hotel zum Blauen Stern.

(*To be continued.*)

A CASE OF INTRAOCULAR TUBERCULOSIS WHICH CLOSELY SIMULATED GLIOMA OF THE RETINA.*

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BALTIMORE.
WITH MICROSCOPICAL NOTES BY W. G. MACCALLUM, M.D.
Associate Professor of Pathology, Johns Hopkins University.

Edward B., a negro lad, 5 years of age, was first seen Feb. 6, 1907, in the out-patient department of the Baltimore Eye, Ear and Throat Charity Hospital. His right eye, the conjunctiva of which was injected, exhibited a circumscribed scleral staphyloma to the nasal side of the cornea. Ophthalmoscopic examination showed marked opacity of the vitreous humor, with a reflex strongly suggestive of glioma of the retina, and this view of the nature of the affection appeared to be confirmed by the yielding of the sclera, the intraocular growth seeming to be about to break through the ocular tunics. Immediate enucleation of the eye was urged, but not accepted.

Three weeks later, February 26, the case reappeared in my clinic at the Johns Hopkins Hospital. The bulging of the sclera by this time had increased somewhat and ulceration of the overlying conjunctiva had occurred. No appreciable change in the intraocular condition was observable with the ophthalmoscope. Removal of the eye was again urged, and this time my advice was accepted and the patient was admitted to the hospital.

Two days subsequently the eye was enucleated in the usual manner, except that the conjunctiva and subconjunctival tissue in the region of the staphyloma were removed, as well as a part of the internal rectus muscle. Recovery from the operation was uneventful.

During the patient's stay in the hospital an abscess found to be present in the calf of his right leg was opened and a considerable quantity of pus evacuated. A careful examination of the lungs, heart and abdominal organs made at this time showed nothing abnormal.

The enucleated eye was sent to the pathologic laboratory of the hospital, where it was examined by Dr. W. G. MacCallum. As will be seen from his report, the intraocular changes which I had regarded as almost certainly due to glioma were, in fact, tuberculous in character.

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* A paper read before the American Ophthalmological Society, May 9, 1907.

At the present writing, nine weeks having elapsed since the removal of the eye, the orbital contents present a healthy appearance and the lad's general condition is fairly good, though the operation wound in the leg has not yet closed and there is a glandular enlargement in front of the left ear.

Microscopical Notes by Dr. MacCallum.

Section through the middle of the eye shows a mass of abnormal tissue occupying a large part of the cavity of the eye (Fig. 3). The lens is pushed forward and the retina is included in the mass and lifted up from the underlying chorioid, from which it is separated by a pigmented coagulated mass. The vitreous humor is reduced to a small amount lying between the foreign mass and the lens. The deeply-stained mass of material occupying the cavity of the eye is seen to extend through the sclera and to spread out upon the outer surface of the eyeball, extending forward as far as the cornea. On the opposite (temporal) side the sclera is apparently intact. The optic nerve shows on one side a small portion of the same deeply staining tissue. Microscopically it is found that this mass is composed of a dense granulation tissue, throughout which are scattered numerous tubercles with typical giant cells, concentric arrangement of epithelial cells, lymphoid cells, etc. There are quite extensive areas of necrosis, with fine fragmentation of the nuclei. The tuberculous granulation tissue is found to begin far forward in the retina, in the substance of which at about the ora serrata there are isolated tubercles. On passing backward it is found that the elements of the retina are spread wide apart by the growth of tuberculous tissue, and fragments of retina are found scattered here and there in the substance of this tissue, usually, however, on its outer surface. The same thing is true on the other side of the eye, where the tuberculous tissue extends forward to the region of the ciliary muscle. The sclera is interrupted at one point, and the tuberculous tissue is continuous with that on the outer surface, which has the same general characteristics. In the space between the tuberculous mass and chorioid, that is, outside of the displaced retina, the fluid and blood which fill that space are permeated by delicate strands of newly-formed connective tissue cells. This is true also of the fluid in front of the retina, for from both sides of the retina near its anterior margin there springs a loose granulation tissue, which sends off these fine filaments in the fluid contents of the eye. The cornea and lens are unaffected. The sclera at the posterior surface of the eye shows a few scattered tubercles in its substance. Repeated search for tubercle bacilli revealed none.

Many cases are reported in which tuberculous lesions of cornea, sclera, conjunctiva, etc., occurred, and not a few of tuberculosis of the iris.

Schultze (*Archiv. f. Augenheilk.* Bd. 33, s. 145-158) described the chronic tuberculous iritis with exudate into the anterior chamber, and thinks it due to infection from the conjunctival sac.

Ammann (Zur Iristuberkulose. *Klin. Monats. f. Augenheilk.,* Bd. 35. 1897, s. 135) found in one case a large white tumor in the corpus ciliare bordering on the iris and cornea.

Lubowski (*Arch. f. Augenheilk.,* Bd. 35, Heft 1-3, s. 183-191) describes a case in which the retina, iris and ciliary body were tuberculous and gave symptoms of glaucoma. The retina in its posterior part was thickened to three times the normal. A flat, cauliflower-like mass projected from the papilla of the optic nerve into the vitreous. Microscopically this was a tuberculous mass. This probably began in the iris and later affected the retina by implantation from the iris. Lubowski could find only three cases in the literature.

Occasionally, but not often, there are glaucomatous symptoms. De Berardini (Tuberculosi bulbare cronica propagata al nervo ottico, *Lavori della clin. ocul. R. Univ. d. Napole,* V., p. 254) described an eye filled with tuberculous masses which extended into the optic nerve and onto the conjunctiva. Animal inoculations positive.

The retina is generally only secondarily affected, even in severe intraocular tuberculosis.

In Kunz's case (*Tuberkulose des Auges,* etc., Inaug. Diss. Marburg, 1898) the retina was involved; and O'Sullivan and Story (Tuberculosis of Retina, Transactions of Royal Academy of Medicine of Ireland, Vol. xvii, p. 1) describe a case in which the retina was the chief seat of infiltration.

THE TREATMENT OF TRACHOMA WITH BORACIC ACID POWDER; WITHOUT MASSAGE.

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COLUMBIA.

The purpose of this paper is to present certain facts concerning the indications for and the method of using boracic acid in impalpable powder in trachoma.

From several sources during the past few years have come reports of considerable success following the use of boracic acid in connection with massage of trachomatous areas by glass and ivory balls and cotton-armed applicators. Such methods are not to be confused with the method here described, which is as efficacious as any and in practice far more simple and also free from the valid objections that may be urged against the procedures having massage as their primary element. Such procedures are essentially surgical and are in some degree destructive to the conjunctiva. While it can not be denied that beneficial results do come from such treatments, I believe that they should be discarded in favor of a more simple and yet quite as effective method.

Massage of the conjunctiva requires anesthesia and skilled manipulation; it is tiresome to the patient and operator and can not possibly be made use of without an unnecessary and damaging traumatism to the conjunctiva. When carried to the extreme suggested by Pratt, Bordley and others it is nothing less than a crude surgical procedure and it defeats the very purpose toward which all treatment in trachoma should be directed, that is, the banishing of the trachoma bodies and at the same time doing the minimum of damage to the rest of the conjunctival tissue.

In 1896 I used boracic acid powder in the conjunctival sac in the treatment of a few cases of trachoma. In 1902 I read a paper before the Boone County (Missouri) Medical Society describing the technic of this treatment, which I have altered but slightly since then. In the past five years I have continued to use this agent with unvarying success in a certain class of cases which I here attempt to depict.

In the early and acutely inflammatory stages of trachoma, complicated with iritis and corneal ulceration, this treatment is not so useful as in the later stages, although corneal ulceration in itself is not a contraindication to the use of boracic acid powder. In the presence of profuse suppuration the boracic acid is perhaps less useful than at any other time.

When scar formation is beginning in the palpebral conjunctiva and in the absence of profuse suppuration, acute iritis and extensive corneal ulceration, I find the boracic acid powder to be more effectual in bringing about a cure than either operative measures or astringents, which latter are perhaps indispensable in the earlier stages of trachoma.

In the types of non-inflammatory trachoma where, as Knapp says, "expression celebrates its triumphs," the treatment with boracic powder is very efficient following the Roller forceps operation. The boracic acid powder will not of itself bring about the disappearance of the heavy mass of trachoma granules that appear, almost pavement like, in some non-inflammatory cases.

From the stage of beginning scar formation on to the very end of the trachomatous process as seen in uncured and untreated cases, the beneficial effects of the boracic acid powder are quickly recognized by patient and physician. I have seen chronic trachoma of from two to ten years' standing subside quite promptly and the lids become relatively soft and pliable from the disappearance of the trachomatous tissue and exudates when the boracic acid treatment was substituted for other and orthodox methods of care. It certainly is true that by this means a cure is effected in trachoma more quickly and, what is far more important, with less scarring of the conjunctiva than follows treatment by the usual methods with silver, copper and surgical appliances.

In cases of trachoma of long standing where a little irritation remains and the cornea is constantly breaking down in and around the area of pannus, where entropion is just beginning and adding its quota to the irritating symptoms, the boracic acid powder celebrates its triumphs.

When cold applications, atropin or pressure pads, or perchance silver nitrate, are clearly indicated, I can not claim to practice the substitution of boracic acid in their stead, nor will boracic acid take the place of well-adjusted lenses when an error of refraction is furnishing just enough irritation to keep a trachomatous process smouldering, as it were, in spite of local treatment. Neither will this form of treatment relieve one of the necessity of looking well to the general condition of one's patient.

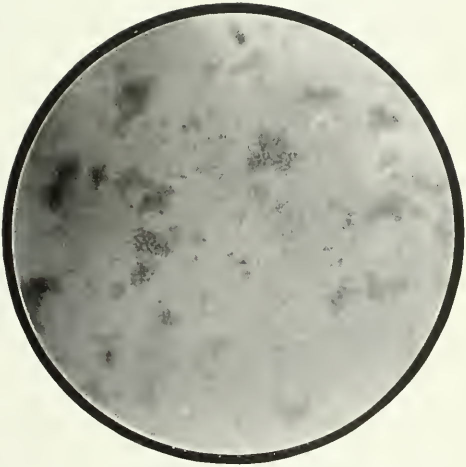
The method that I make use of in applying the powder is as follows: With the patient seated as for ordinary inspection of the eyes, no anesthesia having been made, the upper and lower lids are everted, held in eversion, and the patient is asked to close his eyes. This I believe to be important, for the effort of closing the eye with the lids held in eversion tends to crowd the conjunctiva of the fornix into view and makes possible the application of the powder to the whole surface of the conjunctiva, except the bulbar portion. The powder is now dusted upon the conjunctiva from a medium-sized camel's hair brush which has been heavily loaded with the powder. After a little practice one becomes very skilful in handling the brush and can direct the powder wherever he likes by tapping the handle of the brush with the index finger of the hand in which it is held. As soon as the conjunctiva is deeply covered with the powder the lids are released and, if necessary, are aided in returning to their normal position. Considerable smarting follows the restoration of the lids, but this is far less severe and usually of shorter duration than that following an ordinary application of silver solution or crystal of copper sulphate. The discomfort seems to diminish as the treatment is continued until the patient offers no complaint. The treatment is repeated daily as long as any need for it is evident. After the restoration of the lids I usually place over the eyes a pledget of cotton, thoroughly moistened with some cold, bland solution, for it adds much to the comfort of the patient to be able to make a little gentle pressure over the eyes through such a pledget just after the introduction of the powder.

I have been surprised many times at the rapidity with which the powder is dissolved in the tears which are produced in such great quantities that the conjunctival sac is "ballooned" out, as it were, by them. The ballooning smooths out all folds of conjunctiva in the fornix so that more or less of the boracic powder is applied directly to these commonly inaccessible areas. The blepharospasm immediately resulting upon the introduction of the powder into the conjunctival sac retains the fluid in the sac for some minutes under pressure. To my mind this ballooning of the sac with highly boricized lacrimal fluid, under pressure, explains much of the success attendant upon the use of boracic powder, for during this process the whole conjunctival sac is brought into intimate contact with the remedy in use. Usually with the subsidence of the smarting and the blepharospasm, that is, from two to ten minutes, the powder is found to have dissolved and the treatment is finished.

The reason for the satisfactory action of boracic powder when used in this way seems quite clear. By reason of its irritating properties it induces a congestion of all the conjunctival vessels. This congestion subsides quite rapidly. When this process is frequently repeated, it is said in other situations to bring about absorption of tissue similar to trachomatous tissue. A little opportunity for observation will serve to convince one that trachomatous tissue is made to disappear by the operation of this process repeated at frequent intervals.

Upon the repeated induction of congestion depends much of the usefulness of silver solutions and the copper pencil as used in trachoma, but unfortunately these agents are highly irritating and sometimes escharotic in their action, and while being made use of because of their favorable action on trachomatous tissues they also destroy much valuable conjunctival tissue.

It is absolutely unfair to expect any one agent to be eminently useful in all stages and conditions of a disease with as protean



Bacillus from cases of acute catarrhal conjunctivitis. Oil immersion 1/12 Oc No. 3.

manifestations as trachoma. However, boracic acid powder may be said to cure trachoma, since by its use as herein indicated the trachoma bodies disappear, the cornea clears, ptosis is lessened in considerable degree and hard, thickened lids become pliable and of normal thickness. The tendency to recurrence or acute exacerbation in chronic cases is very noticeably diminished during and after a treatment with boracic acid powder.

For home treatment the method here described seems to the writer to be the most easy of accomplishment, and at the same time the most promising in the matter of results. It is well known that lay persons become very skilful in everting eyelids; the added accomplishments necessary to properly carry out the treatment with boracic acid powder may be easily acquired by any one of average intelligence. In my experience only the most satisfactory results have come in cases in which I have directed the home treatment by this method.

A NEW PATHOGENIC MICRO-ORGANISM OF THE CONJUNCTIVAL SAC.*

Hanford McKee, B.A., M.D.

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From the Pathological Laboratory of the Montreal General Hospital.

[Illustrated.]

During the last few years the widening of bacteriological methods in ophthalmology has been extensive. In 1883 Koch, while working in Egypt, examined the conjunctival discharge in some cases of Egyptian ophthalmia. Among the catarrhal forms he found constantly a very small bacillus, similar in size to the bacillus of mouse septicemia. In 1887 Weeks reported having seen epidemics of conjunctivitis in New York, in the conjunctival discharge of which he constantly found a very small bacillus. This was the same micro-organism which Koch had seen in Egypt. The cultivation of this bacillus was extremely difficult. Weeks was at first only able to cultivate it along with the bacillus xerosis, while Koch's attempt at cultivation had been unsuccessful. The organism and the conjunctivitis were called Koch-Weeks. Since described Koch-Weeks conjunctivitis has been studied extensively, the clinical characteristics of the disease and the cultural features of the bacillus established. Its presence has been reported from many different countries, and it is to-day recognized as one of the most contagious and best known diseases of the conjunctival sac.

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* Read at the meeting of the American Association of Pathologists and Bacteriologists, Washington, May 9, 1907.

Neisser in 1879 had described the gonococcus as seen in the pus of gonorrheal affections of the eye, but it was not until after the Koch-Weeks discovery that much activity was shown in studying the bacteriological factors in conjunctivitis.

In 1896 Morax and Axenfeld described a form of conjunctivitis with definite clinical features, which was caused by a diplo-bacillus. This has been called Morax-Axenfeld conjunctivitis. It is to-day one of the most frequently seen diseases of the conjunctiva.

In 1893 Gasparini reported the pneumococcus as a cause of conjunctivitis and keratitis, while still later to the bacillus influenza was attributed a form of conjunctivitis which usually accompanied systemic influenza.

The work thus begun by Koch and Weeks and further pursued by Morax, Axenfeld, Uhthoff and others has borne such fruit that to-day we are able to divide the different forms of conjunctivitis not so much from their clinical characteristics as from the bacteriological findings.

During the last two years we have been doing this bacteriological work at the Montreal General Hospital, to which institution upon April 6, 1907, a mother brought her infant of 9 months and complained that the baby's eyes had been sore and running for five days. The clinical picture was as follows: Both eyes were involved, upon the lashes was much dried secretion. The palpebral conjunctiva was intensely congested, while the bulbar conjunctiva was quite normal. The lids were not red or swollen. From the conjunctival sac there was a profuse muco-purulent discharge freely mixed with tears.

A little of the discharge was smeared well over a glass slide fixed, and stained by Gram's method, using as a counter-stain a weak solution of safranin. Upon examining the slide I saw here and there tiny Gram negative bacilli which seemed too short and thick for the Koch-Weeks bacillus and too thick for the bacillus influenza. This same bacillus I had seen before, but in the hurry of a large outdoor clinic I had not pursued it further, contenting myself with the thought that it was the bacillus influenza.

Tubes of blood serum, plain agar, bouillon and hemoglobin agar were then inoculated and put in the incubator. After twenty-four hours a growth was seen upon the hemoglobin agar. The other tubes were negative. Smears showed this same small Gram negative bacillus with staphylococci. The bacillus, after a few days, was obtained in pure culture. A conjunctival sac was now inoculated, a conjunctivitis set up, and from the conjunctival discharge the same small bacillus was obtained.

Within a month nine such cases have presented themselves at the outdoor department. They have all been infants and all from among the Jewish colony here. They have all shown definite characteristic clinical features and from each case this same bacillus has been isolated.

SMEAR PREPARATIONS.

In making a smear a loopful of the conjunctival discharge should be teased well over a glass slide, fixed, and stained preferably by Gram's stain, using as a counter-stain a 5 per cent. watery solution of safranin. Gram's stain is especially useful in conjunctival work, eliminating immediately the frequently present Gram positive bacilli. Upon examining the smear one finds here and there tiny bacilli. They are short and thick, their rounded ends giving the appearance of elongated cocci. They may be found in groups, but seem to lie preferably singly. They will be found both within and without the leucocytes, generally without.

From culture the bacillus seems to be slightly larger and tends to appear as diplo-bacilli. It is short and thick, with very pointed ends, is 0.5-2.0 microns long by 0.3-0.4 microns wide. The bacillus shows uniform staining, has no capsule, is non-motile and does not form spores. It is decolorized by Gram's stain, but stains well with weak solutions of carbol fuchsin or methylene blue.

CULTURAL FEATURES.

The tubes of hemoglobin-agar inoculated with some of the conjunctival discharge gave a pretty and characteristic result, which was constant in all cases. After twenty-four hours in the incubator one sees over the surface numerous separate colonies of the staphylococcus albus. Around each of these separate colonies radiating out from them as centers are seen very fine colorless shiny rounded colonies. These colonies are exceedingly fine, seem to keep separate and extend over the whole surface. The original cultures from all the cases were as the one described and showed how well this bacillus grows in commensal relationship with the staphylococcus.

From the original tube the bacillus was obtained in pure culture by surface seeding a plate of hemoglobin-agar. In trying to obtain it in pure culture by transferring from tube to tube the growths were always contaminated by the staphylococcus. Over a plate of hemoglobin-agar, however, by smearing a loop inoculated from one of the small colonies as far from the albus as possible the bacillus in pure culture was readily obtained.

The growth of the bacillus on hemoglobin-agar is characteristic:

After twenty-two to twenty-four hours in the incubator the slant will be seen covered with a mass of tiny colonies. They remain separate and distinct, are colorless, and, as will be seen from the tubes, the colonies are no larger than the sharp end of a pin. Indeed, the growth, though profuse, is at times exceedingly difficult to recognize. It is seen much better by artificial than by daylight, especially with the proper reflection of light. The growth of the bacillus is very easily affected even upon hemoglobin-agar, upon which it grows best. Upon freshly-made hemoglobin-agar it will not grow in less than forty-eight hours. The reaction of the media, too, is of the greatest importance. Hemoglobin-agar, neutral, 1.0 alkaline, .65 acid, 1.0 acid and 1.75 acid to phenolphthalein was made up. Upon alkaline media it would not grow. Upon the neutral and .65 it was with great difficulty transferable. The most satisfactory reaction and the one which has been latterly used is the 1.0 and 1.75 acid.

The cultivation of this bacillus on media, upon which it seemed to thrive best, has been at times unsatisfactory and extremely difficult. Upon the same batch of hemoglobin-agar sometimes it will take forty-eight hours before there is any sign of a growth. At other times cultivation is comparatively easy.

Upon glycerin agar, after twenty-four hours in the incubator, a growth is seen. The surface of the agar is covered with these same tiny pin-point colorless colonies. They are here hardly perceptible, but a smear from the surface will show their presence in quantity.

Upon hydrocele agar the growth is exceedingly fine and is only perceptible with a proper reflection of light. From behind no growth will be seen, but smears from the surface will show the presence of the organism. Upon plain agar the appearance of the growth is similar to that upon hydrocele agar. The growth upon plain agar is by no means constant.

Upon blood serum the results have been negative.

In bouillon there has never been any growth; indeed, even in the water of condensation from a slant where there is a profuse growth the bacilli are very few in number.

To tubes of litmus agar were added dextrose, dextrin, maltose lactose, saccharose, gelatose, innulin and mannit. The growths here were sparse. Over the surface of the agar were seen tiny colorless pin-point colonies.

To similar litmus agar tubes to which sugars had already been added were added a few drops of blood. The growth here was profuse, with no change in the reaction. The bacillus, too, has been cultivated upon dorset egg medium. The appearance of the growth is as if the surface of the medium had been slightly roughened with a swab stick.

To sum up its cultural characteristics, this bacillus grows only at the body temperature and is aërobic. It grows best upon hemoglobin-agar of 1.0 and 1.75 acid reaction. The growth upon the hemoglobin-agar is very easily affected and the cultivation of the bacillus is at times difficult. In commensal relationship with staphylococcus albus the bacillus grows well.

It grows on dorset egg medium, glycerin and hydrocele agar and has been cultivated upon plain agar. It does not grow in bouillon, any liquid medium or upon blood serum. It does not produce gas, does not ferment any sugars and has no chromogenic characters.

VIABILITY.

The cultures on hemoglobin-agar remain viable from two or three weeks, provided there is sufficient water of condensation in the tubes. One culture inoculated on April 11 was transferable April 25 but not on May 3. It had not been kept in the cold nor in any way taken especial care of.

PATHOGENICITY.

For the human conjunctival sac this bacillus is pathogenic. A conjunctival sac which was found to be free from micro-organisms was flushed well out with warm water. Fifteen minutes later the sac was inoculated with a loopful of a twenty-four hour growth. Twelve hours later there was a feeling of "something in the eye." and six hours later the eye showed a marked catarrhal conjunctivitis. The palpebral conjunctiva of the lower lid was especially involved. The posterior conjunctival vessels were somewhat dilated, otherwise the bulbar conjunctiva was not involved. From the muco-purulent discharge, which was here, too, freely mixed with tears, the organism was obtained.

With the washing from a slant on hemoglobin-agar an ordinary house mouse was inoculated intraperitoneally; eighteen hours later the mouse was unable to move and six hours later was dead. At autopsy the peritoneum was found injected and filled with a gelatinous sticky exudate. Smears showed the pus cells filled with the bacilli and little or no fibrin. Inoculations from the peritoneum on hemoglobin-agar gave pure growths of the bacillus.

This tube was washed down and inoculated intraperitoneally into a white mouse. Twenty hours later the mouse was dead. Postmortem was found marked peritonitis of the gelatinous type similar to Case 1. From the peritoneum here was obtained the bacillus in pure culture. A different strain of the bacillus on hemoglobin-agar was now taken and the wash similarly injected into a white mouse. Sixteen hours later the mouse seemed very ill and was unable to stand up or move, and four hours later was dead. From the peritoneum, which showed a marked peritonitis similar to the previous cases, two tubes of hemoglobin-agar were inoculated, which twenty-four hours later gave pure growths of the bacillus. Hemoglobin agar was also inoculated with the heart's blood, which twenty-four hours later gave a pure growth of this same bacillus. Two house mice were inoculated with two different strains; twenty-four hours later they were both dead. Postmortem was found the marked gelatinous peritonitis, from which pure cultures were obtained, also pure cultures from the heart's blood. In one case two tiny loopsful from the heart's blood gave a growth covering the entire surface of the agar. To check these experiments on April 29 last four mice, two white and two house mice, were inoculated intraperitoneally with four different strains of the bacillus. The inoculations were done at 4 p. m. on April 29. At noon the following day one white mouse and one brown one were dead. The other two were unable to move or stand. Postmortem was found the peritoneum in all cases involved as before. From the peritoneum and from the heart's blood in each case were obtained pure growths.

DISCUSSION AND DIFFERENTIATION.

This micro-organism then, a cause of conjunctivitis, needs to be differentiated from the different known bacteriological causes of conjunctivitis. Differentiation from Morax-Axenfeld's diplobacillus, Petit's diplo-bacillus, Friedländer's bacillus and bacillus coli and bacillus subtilis may be dealt with in a few words. It is far too different morphologically and culturally to necessitate going into minutiæ here. The pathogenic micro-organisms of the conjunctival sac, which it must be differentiated from, however, are the Koch-Weeks bacillus and the different influenza bacilli, namely, the influenza bacillus of Pfeiffer, the so-called influenza bacillus of conjunctivitis of Müller and the pseudo influenza bacillus of Zur Nedden.

1. *Clinical Considerations.*—While the different bacteriological factors causing conjunctivitis do not always, yet in the majority of cases these organisms do give rise to well-marked characteristic clinical pictures. In Koch-Weeks conjunctivitis one finds reddened and edematous lids, intense injection of the bulbar con-

conjunctiva, with profuse muco-purulent discharge. In influenza conjunctivitis there is a well-marked involvement of the bulbar conjunctiva and signs of influenza elsewhere. The bacillus influenza has been found in the normal conjunctival sac and in odd cases of conjunctivitis where there were no general signs of influenza, but in the majority of cases influenza conjunctivitis accompanies systemic influenza. Clinically, Koch-Weeks, influenza, and the form of conjunctivitis here described are very different.

2. *Morphology.*—Differentiation by morphology is unsatisfactory and here unnecessary. While the Koch-Weeks bacillus may be differentiated from the bacillus influenza, I am ready to admit that morphologically they are strikingly similar.

3. On media these organisms differ widely. The Koch-Weeks bacillus does not grow well on hemoglobin agar as here used, it grows best on hydrocele or ascitic agar. When growing even with the bacillus xerosis it is hardly perceptible and dies out very quickly in forty-eight hours or a little longer.

The bacillus influenza in the presence of hemoglobin after twenty-four hours shows a profuse raised growth of round whitish colonies. The growth is easily seen, the colonies being the size of an ordinary pin head. Older colonies show some change in color.

The bacillus here described on hemoglobin agar gives a very characteristic appearance: over the surface of the agar, with a proper reflection of light, is seen a mass of tiny pin-point colorless colonies. The growth is not easily seen. This organism has also been cultivated on media free from hemoglobin.

4. *Pathogenicity.*—The Koch-Weeks bacillus, while pathogenic for the human conjunctival sac, is not pathogenic for animals. The bacillus influenza is slightly pathogenic for some animals. Pfeiffer found by injecting intravenously into rabbits the bacillus influenza a characteristic effect was produced. He attributed these results to toxic products present in the cultures, and in none of his experiments was he ever able to obtain effects resembling septicemic infection. Cantani by injecting the bacillus influenza into the anterior portion of the brain of rabbits succeeded in producing an acute encephalitis. The bacilli, however, were never found in the blood or other organs.

This bacillus is pathogenic for mice. In every case where injected intraperitoneally a marked peritonitis was set up and a septicemia, as evidenced by pure cultures of the bacillus, being obtained from the heart's blood.

This organism then is similar to the different influenza bacilli in morphology and in its growing well in commensal relationship with the staphylococcus.

It is not bacillus influenza for the following reasons:

(1) The form of conjunctivitis set up differs from influenza conjunctivitis.

(2) This bacillus on hemoglobin agar differs widely from bacillus influenza. On this media, under most favorable conditions and with the media at a most suitable reaction, the growth is hardly perceptible and differs from the bacillus influenza on the same media in size, color and appearance.

(3) The bacillus has been cultivated on media free from hemoglobin.

(4) It is viable for a much longer period than the bacillus influenza.

(5) It is pathogenic for mice causing a septicemia.

CONCLUSIONS.

We have, then, here to deal with a new form of conjunctivitis set up by a new etiological factor. That factor resembles somewhat the bacillus of influenza, but differs from it widely on media, viability and pathogenicity. From the examination of 500 cases of conjunctivitis during the last year and a half this series of cases, occurring within a month, seems to be different from previously described types. Nine cases I recognize is, indeed, a small number to draw conclusions from, but the characteristic clinical features of these cases caused by an organism not as yet described as a pathological factor in conjunctivitis leads me to the conclusion that we have here to deal with a new form of conjunctivitis set up by a new organism of the conjunctival sac.

Until the clinical features from which the bacillus should take its name are better understood I shall call it bacillus McKee.

I take great pleasure in expressing my thanks to Dr. C. W. Duval, the director of the laboratory, for much assistance while doing this work.

AN IMPROVED ENTROPION FORCEPS.

Arthur E. Ewing, M.D.
ST. LOUIS, MO.

[Illustrated.]

Of the many operations that have been proposed, and the many that are in actual practice for cicatricial entropion of the eyelid, which is a deformity of the tarsal cartilage that causes the lashes to

PLATE I

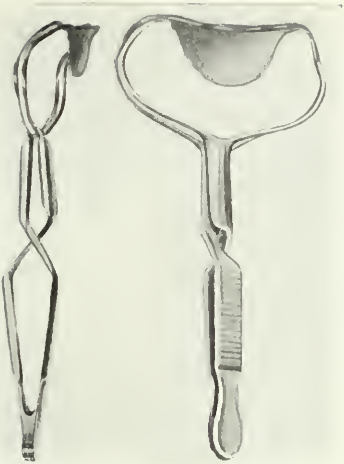


Figure 1.

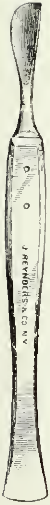


Figure 2.

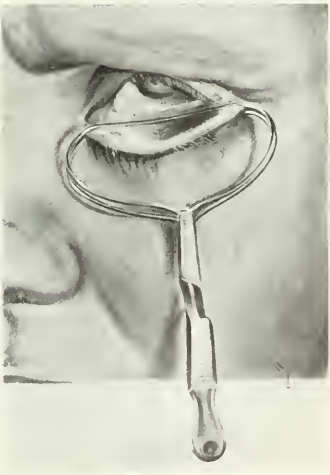


Figure 3

Fig. 1. An improved entropion forceps.
Fig. 2. Dr. Green's entropion knife.
Fig. 3.—The entropion forceps applied to the lower eyelid.

PLATE II

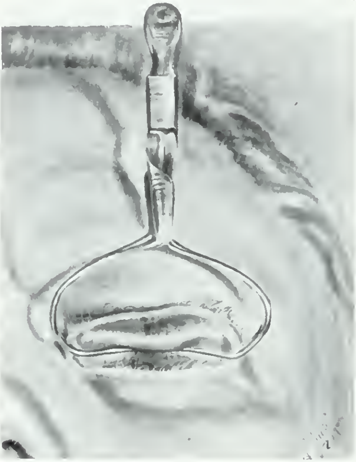


Figure 4

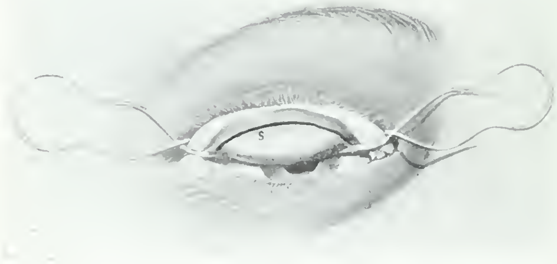


Figure 5

Fig. 4.—The entropion forceps applied to the upper eyelid
Fig. 5. s. The line of the subsection or tarsal incision.

PLATE III

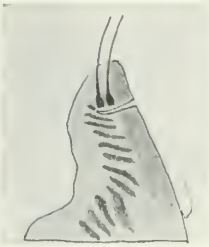
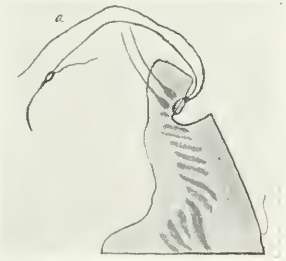


Figure 6.



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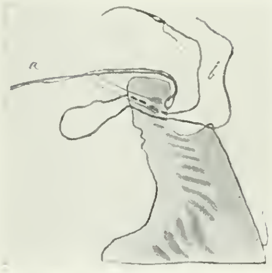


Figure 8.

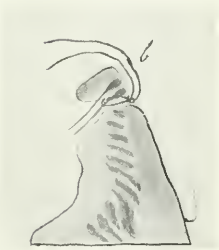


Figure 9.

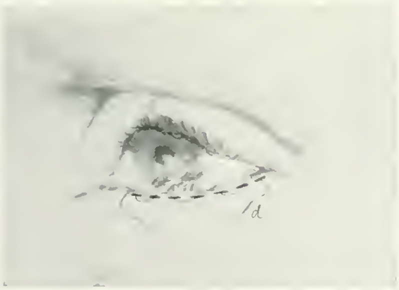


Figure 10.

Fig. 6. The depth of the tarsal incision or subsection.
Fig. 7.—*a*. The temporary thread to replace forceps.
Fig. 8. *b*. An inserted suture which outlines the path for the sutures. *a*. The temporary forceps thread.
Fig. 9.—The eversion produced when the suture, *b*, has been tied, lower lid.
Fig. 10.—The location of the sutures at the base of the cilia along the lower lid and beneath them the thread, *d*, forming a quill suture.

PLATE IV

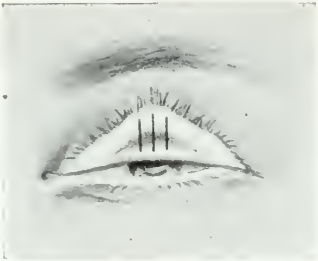


Figure 11.

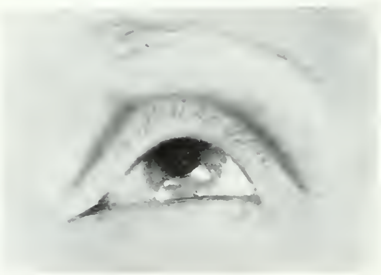


Figure 14

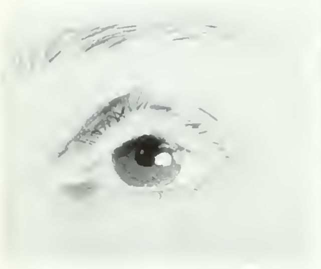


Figure 13.

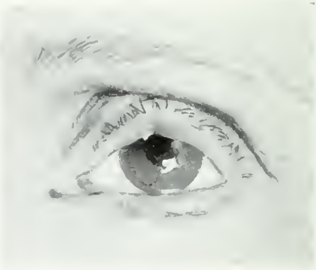


Figure 12.

Fig. 11.—The vertical incisions of Dr. Green for correcting persistent puckering of the eyelid, which occasionally results from subsection.

Figs. 12 and 13.—Temporary puckering of the upper eyelids a few weeks subsequent to having been operated on.

Fig. 14.— The final result on the upper lid of the eye represented in Figures 10 and 12, after the lapse of eight months.

turn backward in such a manner as to rub upon and irritate the cornea and conjunctiva, there are few that attack and correct the real cause of the mischief, namely, the abnormally curved and usually thickened tarsus. The ideal operation is one that will rectify this deformity, restore the lid margin to its normal position and curvature and the cilia to their normal position, the cilia being necessary to the proper protection of the globe; it should also accomplish this without further destruction to the tissues already shrunken and distorted by disease. How widely the numerous methods in vogue vary from this ideal may best be comprehended by enumerating in brief their individual procedures:

(1) The removal of the cilia entirely by means of the knife, electrolysis, acids, caustics or the cautery.

(2) The removal of the tarsus.

(3) The removal of integument.

(4) The removal of muscle.

(5) The division of the tarsus by vertical incisions.

(6) Various methods of suturing.

(7) Those that remove integument and transplant the ciliary border after having separated it from the tarsus.

(8) Those that remove integument, slit the lid margin and filll the wound in the latter with mucous membrane or integument.

(9) Those that remove muscle and groove the tarsus.

(10) Those that remove muscle, groove the tarsus, slit the lid margin and fill this last wound with integument or mucous membrane.

(11) Those that divide the tarsus its full length horizontally and by removal of integument maintain the wound in a gaping position to gradually fill with granulation tissue.

(12) Those that divide the tarsus horizontally in the scar formed by the disease and depend upon this for correcting the faulty position, or render aid by painting the overlying dermal surface with contractile collodion.

It will be seen from this tabulation that only one, the last in the category, approaches the ideal. Although this is by far the most rational, and to the tissues the kindest of all the procedures (unless it be those that depend solely upon sutures, which too frequently relapse) it has been found to fail occasionally in practice, probably for two reasons, one, the continuation of the cicatrization process in the tissues, the other, the shrinkage of the granulation tissue upon which the operation depends for its permanency to such a degree that the faulty position is re-established.

Having met with such a failure, it occurred to me that, instead of using mucous membrane or integument from elsewhere on the body, the conjunctiva from the ciliated portion of the divided tarsus might be dissected back to a little beyond the tarsal incision and filled into the wound so as to prevent reunion. This case was reported to the American Ophthalmological Society in 1900. Later, in the performance of this operation upon a subject where the dissection was practically a failure, the conjunctival edge of the orbital or standing portion of the tarsus was sutured into the incision back of the portion bearing the cilia in such a way as to cause permanent eversion of the latter, and, after the lapse of a year, yielded a result so nearly approaching the normal as not to be distinguished from it. This was reported in the *American Journal of Ophthalmology*, February, 1903, and in substance will be repeated here in connection with the description of an improved forceps for making the tarsal incision.

Before proceeding to the operation the surgeon should assure himself that the conjunctival tissues are quiet and free from sponginess or acute infection. Should such conditions exist it is best to keep the lashes out of the eyes for a number of days by means of contractile collodion and use such treatment as may be indicated to improve the conjunctiva. If the cilia have recently been pulled out, which is usually the case, they should be permitted to grow for a week or ten days until they may be seen and their direction determined.

For the operation, where the conjunctiva is quiet and the conditions are favorable to healing, the dermal surface of the lids should be cleansed with soap, and then with alcohol, and the conjunctival surface by mild irrigation with a normal saline solution. Any method of anesthesia may be resorted to that the surgeon may prefer. Personally I employ holocain 1 per cent., cocain 5 per cent., adrenalin chlorid 1/1000 solutions upon both the dermal and the conjunctival surfaces, upon the former for twenty minutes applied with a pledget of cotton, and upon the conjunctiva from five to ten minutes, using the cocain several times, preventing it as much as possible from flowing over the cornea in order to protect the epithelium. In the case of children, general anesthesia is to be preferred. The instruments necessary are entropion forceps (Fig. 1), a small bistoury or, better, a Green entropion knife (Fig. 2), a Graefe knife, small curved, half-curved or straight needles (the half-curved is my preference) bearing No. 2 or 3 black silk thread, a short needle with a large eye armed with a No. 12 thread, or in its place a catgut of this size, needle forceps and scissors. As I introduce all the sutures before tying them, four to seven for the lower lid, and seven to ten for the upper, where the whole lid margin has become involved, a small clamp is employed to keep each suture to itself. All instruments and sutures should be rendered aseptic.

In order to apply the forceps to the lower lid the broad blade is placed against the lid just below the line of cilia and gentle pressure is made backward and downward until the conjunctival surface is turned forward sufficiently to admit of placing the thinner blade back of the tarsal plate (Fig. 3). For the upper lid it is necessary to first evert the lid. The broad blade is then readily applied to the dermal surface at any desired distance from the cilia, and the thinner blade is made to grasp the conjunctival surface in the fornix back of the tarsus in such a manner as to fit snugly into the inner and outer angles (Fig. 4). The tarsal incision or subsection is made from the conjunctival surface, and should be placed 2.5 mm. or 3 mm. from the lid margin, beginning opposite the punctum and ending near the outer angle (*s* in Fig 5). Throughout its full length it should extend through the tarsus, posterior to the bulbs of the cilia, and well into the adjoining tissues, but not entirely through the lid (Figs. 6, 7 and 8). Any remaining fibers that prevent the free pulling forward, as shown in Figure 7, of the separated portion of the tarsus so that the dark fibers of the orbicularis muscle may be exposed in every part of the wound should be divided, best with a Graefe knife. In order to do away with forceps, which are clumsy as well as injurious for handling so small a piece of tissue, a thread may be placed at the center of the lid back of the separated tarsus, to serve as forceps (*a* in Figs. 7 and 8). At this point the clamp may be removed or permitted to remain: by its removal the wound may be more easily inspected as to the thoroughness of the subsection, the hemorrhage usually being very moderate, particularly when adrenalin has been used. A small needle bearing a sterilized No. 2 or 3 thread is now introduced from the conjunctival surface in the conjunctival edge of the standing or orbital portion of the divided tarsus (*b*, Fig. 8), passed into the bottom of the wound back of the tarsus bearing the cilia and is brought out upon the dermal surface just behind or among the cilia. It is then re-entered through the skin in the same horizontal line two or three millimeters distant from where it emerged (Fig. 10), and the suture is tied with moderate firmness in the wound, causing the cilia to be everted and to take the position, in the case of the lower lid represented in the accompanying diagram, Figure 9. Moderate excessive eversion is desirable; it will disappear as the wound heals. For the lower lid from four to seven, and for the upper lid seven to ten sutures are employed, their number depending upon the length of the incision and the severity of the inversion. Before tying them, a large thread or catgut, about a No. 12, should be passed along upon the skin under them (*d*, Fig. 10) to act as the quill in the quill suture and to prevent their burying themselves in the skin, as well as to aid in their removal, it being easy to locate and divide them by lifting up the end of this thread. The location of the sutures along the lid at the base of the cilia and also the quill thread is shown in Figure 10 of the diagrams. They may be tied upon the dermal surface, each being armed with two needles which are introduced in the conjunctiva 2 mm. apart. After cleansing the lid and the conjunctival sac with mercury bichlorid, 1/5000, solution, followed by a normal saline solution, the eye should be bandaged.

The following day the eye should be redressed and cleansed with the same solutions without everting the lid for fear of disturbing the wound. This should be repeated each day afterward until the sutures are removed, the eye in the meantime being kept bandaged. On the second day, when the circulation is well established, the cilia may be laid back against the lid over the stitches with collodion and the stitch wounds on the dermal surface covered with it as a protection to them. When there is no tendency to suppuration the sutures should be permitted to remain from five to seven days. As healing progresses small granulomata may appear along the track of the incision. They should be curetted or removed with scissors; frequently they will disappear by the use of a drop of adrenalin chlorid, 1/1000, upon them once or twice a day. For a number of days after the removal of the stitches and the bandage, which should occur simultaneously, I have found it best to not evert the lid very frequently, quiet being essential to rapid and proper healing. It is also of value to clean the conjunctiva daily with a drop or two of silver nitrate solution, 1/480 or 1/240, followed by a gentle normal saline douche.

In the formation of the scar there is sometimes puckering of the lid margin at or near the center of the lid which will usually rectify itself in the course of a few months, and in the course of a year disappear entirely with advantage to the eversion. Should it persist, the vertical incisions suggested by Dr. Green may be employed with excellent effect. These are usually three in number, one dividing the scar vertically deeply through its center to but not including the lid margin, and the others three or four millimeters to either side of this one, being made deep into or through the scar (Fig. 11). These incisions free the knot, so to speak, and by their gaping permit the lid to assume its proper shape. Mild examples of this puckering are shown in Figures 12 and 13 of the accompanying diagrams, and when it is no more marked there is no necessity for further operative interference.

The operation differs from those of Green and Burow only in the suturing of the standing or orbital portion of the divided tarsus into the wound made by the tarsal incision, thereby everting the separated portion bearing the cilia into the position desired and compelling it to heal there permanently. It is adaptable to both upper and lower lids and to the whole of the lid margin or any part of it, with the advantages of causing no loss of tissue, freedom from liability to necrosis, the ideal restoration of the lid margin, and the possibility of repetition in the case of partial failure, without detriment to the eye or the lid.

A clean smooth tarsal incision being necessary in the operation in order to give for the sutures a hold in the conjunctival edge of the orbital tarsus, and there being no clamp suitable for such an incision in an everted lid, several were devised and described in the *American Journal of Ophthalmology*, March, 1905. The present one (Fig. 1) is an improvement upon the last of these, the difference being that a broad plate, something the shape of the upper tarsus, has been added to the lower blade, so that greater resistance may be offered to the knife in performing the subsection. The plate is about ten millimeters broad and lies in the plane of the biting portion of the blade and the tip of the handle, in which position it does not interfere with the manipulation of the lid. Both blades are made of light steel spring or "piano" wire 1 millimeter in diameter. Near where they clamp they are curved backward in such a way as to not interfere with the operator in the insertion of the sutures, and are attached to a very light self-clamping forceps, although the screw adjustment may be substituted, should it be desired. I may here add that the first of the clamps mentioned in the article above referred to, which has the screw adjustment, may be constructed to be self-clamping, and this newly devised plate may be affixed to any of them. In the self-clamping patterns, however, the action should be very mild, the tension being only sufficient to control the hemorrhage and such as to cause no pain when applied to the lid under cocain anesthesia.

How well these clamps perform their service upon atrophied lids is best shown in the accompanying diagrams (Figs. 3 and 4), which are drawings from photographs of the original pattern of the clamp, applied to the eye represented in Figure 10. This diagram (Fig. 10) is a reproduction from a photograph of a subject, in which the inversion was such that practically all the cilia turned backward upon the globe. In the same case the above mentioned postoperative puckering of the lids at the margin is very well shown in Figure 12, which is reproduced from a photograph taken a few weeks after the lid had been operated upon. The final result in the same eye is illustrated in Figure 14, a reproduction from a photograph taken after the lapse of eight months.

SYMPATHETIC IRRITATION FOLLOWING MULES' OPERATION.

Linn Emerson, M.D.

Assistant Surgeon to the Manhattan Eye, Ear and Throat Hospital, Oculist and Aurist to the Orange Memorial Hospital.

ORANGE, N. J.

Noting in the Ophthalmic Year Book for 1907 the rarity of sympathetic disease following Mules' operation, I desire to add to the recorded cases one which occurred in my own practice.

J. G., female, aged 11 years, came under observation early in June, 1903. The eye had been penetrated with a sewing needle, wounding the lens and possibly entering the vitreous. The gravity of the injury was not appreciated and no treatment was undertaken until panophthalmitis was well marked.

Active treatment failed to relieve, and corneal incision with evacuation of lens and purulent material was performed. When the eye became quiet, evisceration and implantation of glass ball was done.

On Sept. 14, 1903, an artificial eye was fitted and patient was very comfortable until December 2, when she returned, complaining of lachrymation and photophobia. For three months this irritation persisted to a greater or less degree. Active treatment was carried out, including atropin, hot water, rest, dark glasses, proper corrections of refractive error (+ 1.00 S.) and several changes of artificial eye, although no irritation of the stump could be discovered.

Finally, on March 3, 1904, the sclera was incised and the glass ball permitted to escape. A few drops of straw-colored fluid were present. The ball was perfectly smooth and the cavity apparently healthy. Relief was prompt and the patient has had no further trouble to date.

THE HOGUE-CALIFORNIA TRIAL FRAME.

F. B. Eaton, M.D.

PORTLAND, OREGON.

(Illustrated.)

The trial frame here illustrated, while it is pictured in some instrument catalogues, has not yet been properly or correctly de-

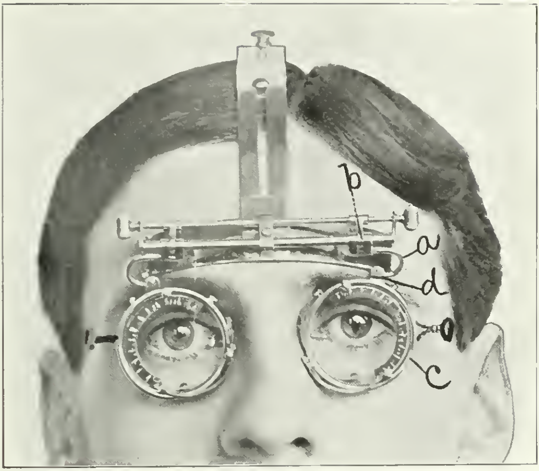


Figure 1.

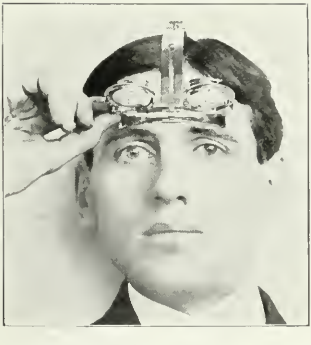


Figure 2.

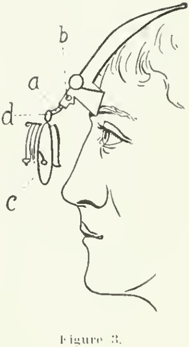


Figure 3.

scribed. It is a California invention, having been originally devised by Mr. Charles Hogue, of San Francisco. In 1903 he explained to me his idea, but the task appeared then to me to be well nigh impossible practically. Through the California Optical Company he was enabled, after three years of experiment, to present it in its present form. I therefore call it the Hogue-California Trial Frame.

In the Meyrowitz 1906 Catalogue, p. 24, the cut does not show the latest and finished model. In Figure 1, here given, are shown the side mill-heads with very long shoulders, by which the two front cells on each side are revolved without interfering with the adjustment of the frame. The rear cross end of the spring metal headband is now short and concaved. The value of this frame can only be appreciated clinically.

The arm *a*, Figures 1 and 3, is pivoted at *b* to the forehead bar, and at *d* to the cell *c*. This permits the lenses not only to be placed at varying distances from the eyes, but, as shown in Figure 3, to also be inclined forward to suit the downward gaze, and thus the plane of the lenses adjusted perpendicularly to the line of vision.

In skiascopy the frame is especially useful, since the lenses are easily adjusted, and by slightly leaning forward the surgeon can easily change the axis of the cylinder.

Properly put on, the hair of lady patients is not deranged, or the surgeon's patience, if he possesses an average amount. I have found this frame for all purposes where an optometer of the Oliver type is not used to be well nigh indispensable.

Reports of Societies.

BRITISH MEDICAL ASSOCIATION.

Annual Meeting, held at Exeter, July-August, 1907.

L. H. Tosswell, M.B., President, in the Chair.

After some remarks by the President, Professor Landolt (Paris) opened a discussion on the Form and Manipulation of Instruments Used in Ophthalmic Surgery. He said he felt it rash on his part to come and talk of ophthalmic surgery in a country which still possesses such masters in the art, but it was for this reason he had selected his subject. Although we did well to follow in the wake of the general surgeon, yet with regard to operative technic we could emancipate ourselves from the old methods and evolve new ones more suited to our particular province. He considered that many of the instruments now in use retained the design and form given them by the general surgeon, and were not so well adapted to our purposes as they might be, due to the fact that ophthalmic operations differed so much from the operations of general surgery. The eye was the most movable organ in the body and the most difficult to fix, and yet the operation on it demanded mathematical precision in execution. In order to attain this, the finger tips should be brought as close as possible to that portion of the instrument which has to do the actual work. The requisite movements should be performed by the fingers themselves, and not by the wrist or arm, and the minimum of muscular effort should be employed. A heavy or slippery handle or forceps with too strong a spring would detract from the fineness of the execution. In most small scalpels the blade was too long and at too great a distance from the handle. He then showed patterns of knives which he considered correct and compared them with others of an incorrect pattern. In the former one could almost obtain the sensation of operating with one's own fingers, and the resistance of the tissues could readily be appreciated. Cataract knives were generally well made, but makers usually separated the blade from the handle by a shaft which was too long. The same applied to keratomes. As a rule, a shaft of 35 mm. was given, when one of 22 mm. or 20 mm. would be far better. The blade also should be curved. The shafts of Pagenstecher's and Taylor's spoons were far too long for delicate handling. The same was true of cystitomes, curettes and spatulas. Ivory was an ideal material for the handles of instruments, and it was, in reality, not so much the ivory as the cement used to fix the blade which would not stand the heat of sterilization; and this could be got over by screwing the blade in, instead of fixing it in the usual manner. Steel and aluminum handles were well enough for the large knives of general surgery, but they were nothing like so satisfactory for eye instruments, as they were, as a rule, too heavy, and did not adhere to the fingers like ivory, and consequently a greater muscular effort was necessary when using them. He had never found a handle too short, but frequently they were made much too long.

Many forceps had the spring too strong and the blades too weak. We required light springs and strong blades, and the portion below the grip should be shortened by about 10 mm., while the teeth, instead of being placed at right angles to the blades, were much better if placed obliquely and perpendicular to the surface required to be seized. The ordinary forceps secure an inefficient hold of the tissues, and in order to remedy this longer teeth were recommended.

He described the correct method of holding scissors, which should be proportionate in size to the hand of the operator; so often the handles were too long and too delicate, while the blades should be strong and not too pointed.

Much the same principles should be applied to other instruments, which all depended upon the fundamental rules in handling them.

Mr. Jessop agreed with the points raised by Professor Landolt. The curvilinear keratome was a very useful instrument, and the cross-bill forceps were very handy, especially in advancement cases.

Dr. Grossmann thought that the length of the blade and handle of knives would necessarily vary with the operator. Straight-edged keratomes were easier to sharpen than curved ones. He thought, as regards forceps, it was an excellent plan to have the teeth fixed at an angle of 45 degrees, and he had had for the last 25 years such an angle introduced on epilation forceps.

Mr. Simeon Snell (Sheffield) read a paper on "An Enquiry into the Causes of Blindness in 333 Inmates of the Sheffield School for the Blind." In this school, he said, there were 70 inmates. At first there were fewer patients, as only completely blind children were admitted, but since the Education Act of 1893 a proportion of not altogether blind patients had been received, for by this act the term "blind" meant "too blind to read the ordinary school books used by children." These, however, formed but a very small proportion of the cases, and, with rare exceptions, for the purposes of this paper, all cases could be considered as blind in the ophthalmic sense. Of the 70 inmates, half were males and half females. At first all the children came from Sheffield, but since 1893 they had been coming from a very wide area. There were at present 20 from Sheffield and 50 from the surrounding parts of England. Ophthalmia neonatorum provided no fewer than 136 out of 320 cases, or 42.36 per cent.. and in recent times there did not appear to be any diminution from the ravages of this disease, which was still rampant, notwithstanding the efforts made to stop it, and the fact that it must be regarded as a preventable disease, and when present it could almost always be successfully treated. Although the medical profession was alive to its importance, yet much was needed to bring the truth home to midwives, in whose practice these cases mostly occurred. He had not found, in his practice, that the disease was less frequent than formerly.

Ulceration of the cornea other than as the result of ophthalmia neonatorum was the cause of 7 cases, or 2.18 per cent.

Trachoma caused only one case, or .31 per cent.

Interstitial keratitis caused 10, or 3.11 per cent.

Sympathetic ophthalmitis was the cause of blindness in 22 cases, or 6.85 per cent. Four were boys and eight girls. Thirteen were injured in the right eye and six in the left, while in three the injured eye was not specified.

Of congenital cases, anophthalmos gave 3, or .93 per cent; hydrophthalmos gave 5, or 1.55 per cent.; microphthalmos, 6 cases, or 1.86 per cent., and in one of these there was a coloboma of the iris and chorioid. There was one other case of coloboma below. There was one case each of albinism and nystagmus. There were 30 cases of congenital cataract, or 9.3 per cent.; 8 girls and 22 boys, and in one the globes had been destroyed after operation, apparently from suppuration. Operations had been done in 23 of the cases, and some admitted of further operative interference. In two or three cases further operation had been successful, but the vision was very defective owing to optic atrophy. Seven cases were of lamellar cataract which had not been operated upon, and these were all suitable cases for surgical interference.

Congenital blindness due to retinal and chorioidal disease and optic nerve atrophy produced 20 cases, or 6.23 per cent. He gave the family history of most of these cases.

Smallpox produced 4 cases, or 1.24 per cent. None of the 4 showed any sign of vaccination.

Scarlet fever caused 9 cases, or 2.8 per cent., and in one case there was optic atrophy.

Measles produced 11 cases, or 3.42 per cent. German measles, whooping cough and enteric fever, 2 cases each, .62 per cent.

Optic atrophy from brain disease caused 35 cases, or 10.9 per cent.

Injury to the head caused 7 cases, or 2.18 per cent.

There were 2 cases of glioma in both eyes, or .62 per cent. Refractive errors produced 2 cases, or .62 per cent., but both of these were capable of much improvement with glasses.

There was only one case of malingering.

Only 8 cases were excluded from this report owing to insufficient information about them.

Mr. Sydney Stephenson remarked upon the large number of children blinded by ophthalmia neonatorum (42.36 per cent.), and, as most, if not all, of these cases could have been saved, he moved the following resolution:

"That, in the opinion of the Section of Ophthalmology, the time has come when action should be taken by the British Medical Association toward the prevention of ophthalmia neonatorum." This was seconded by Dr. Grossmann, and carried unanimously.

Mr. John Hern (Darlington) said that most of the cases of ophthalmia neonatorum which came under his notice had been attended by midwives, and, as more cases were now handed over to these women, so more cases of ophthalmia neonatorum would develop. He thought that the brain cavity should be opened in cases of intracranial pressure as a means of relieving optic neuritis and preventing it passing on to optic atrophy.

Dr. Trotter (Perth) said that ophthalmia neonatorum was diminishing in his district. He had only seen one case in four years in hospital and none in private. This he attributed to the use of 2 per cent. silver nitrate solution applied to the eyes after birth and to the absence of a Midwife Bill.

Mr. Cecil Shaw (Belfast) said that the source of such cases he had lately seen was the too vigorous action of prophylactic measures carried out by midwives.

Dr. Ernest Thompson (Glasgow) had recently gone into the question of the prevalence of ophthalmia neonatorum in cases treated in the Glasgow Eye Infirmary, and he had proved that during the last 15 years there had been no appreciable diminution of the disease.

Mr. Richardson Cross (Bristol) said that in all blind schools ophthalmia neonatorum provided the largest number of patients, though for years it had been known as an absolutely preventable disease. In many cases blind from cataract the condition was complicated by abnormal brain development. He thought that, where practicable, a wounded eye in a child should be saved, so that the orbit should not atrophy; but such cases should be very carefully watched, as sympathetic ophthalmitis was sometimes very quiet in its onset and might be overlooked for some time. Trephining, he thought, should be done in cases of optic neuritis due to intracranial pressure.

Mr. Snell replied.

Dr. Henry Manning Fish (Chicago) read a paper on the relation of Diseases of the Nasal Accessory Sinuses to Optic Neuritis. He based his paper on 36 consecutive cases of optic neuritis in which nasal accessory sinus disease was present 26 times. Improvement followed treatment of the sinus disease in 15 cases, including 3 bilateral cases, which were restored to normal. In spite of many published cases, this cause of optic neuritis appeared to be still doubted by some writers. He had found about 100 published cases of both primary and secondary optic neuritis, with all degrees of visual disturbance from slight optic neuritis with no reduction of vision to total loss of light perception. These cases further showed that disease of the air sinuses of the head and face could cause optic neuritis owing to extension from them. He recounted several cases in which the vision was restored or much improved by opening the affected sinuses. The most common type of acute sinuitis was a cold in the head, accompanied often by a greenish nasal discharge. Chronic sinuitis might remain dormant for months or years and suddenly become manifest at any time. Involvement of the external ocular muscles was present in 33 per cent. of the cases. Out of 36 consecutive cases he had found sinus disease present 26 times, and in 15 cases improvement of the ocular condition followed drainage. The 11 cases in which no improvement followed he attributed to the same cause, though he admitted that some unknown etiologic factor might be present in some of the cases. He considered that idiopathic facial erysipelas, when the optic nerve was involved, was but an evidence of streptococcic or staphylococcic infection of the buccal, aural or nasal cavities. Syphilis frequently caused sinus empyema. He described a number of cases in patients suffering from different diseases in which drainage of the affected sinus caused relief of the symptoms, including several cases of glaucoma. He concluded by instancing the case of the late Dr. Javal, who was blind from glaucoma for several years before his death. He thought that, had treatment been directed toward the drainage of the nasal sinuses in place of the repeated operations on the eye, all of which were in vain, he might have retained his sight to the end. He wished to emphasize the fact that an absolutely negative nasal finding did not exclude accessory sinus disease, and he was convinced that sinus disease was one of the most frequent causes of optic neuritis.

Mr. Ransom Pickard (Exeter) said that he had recently had a case of bilateral optic neuritis (not retrobulbar) accompanied by purulent discharge from above the middle turbinates. The neuritis subsided and the vision improved after the discharge from the nose ceased.

Dr. Reber (Philadelphia) thought that the diagnosis of lateral accessory sinus disease was extremely difficult and called for the highest technique. Although he did not think that double optic neuritis was often due to sinus disease, yet he considered that unilateral optic neuritis was frequently due to a local cause. He mentioned two cases.

Dr. Chichele Nourse said that, as a rhinologist, he greatly appreciated Dr. Fish's paper, and he had done good in pointing out a field of work which would doubtless prove fertile in the future.

Dr. Dykes Bower (Gloucester) entered a plea for the more systematic examination of the nasal cavity by ophthalmic surgeons. He, however, did not think that the association of ophthalmic diseases and nasal diseases was very common.

Dr. Fish replied.

Dr. Carl Grossmann (Liverpool) showed a portable refractometer and astigmometer, consisting of lenses arranged in a rectangular frame, which was held in front of the patient's face for doing retinoscopy and for testing vision with test-types. The cylinders had a mechanism for revolving them and placing their axes at any required position. He also showed an improved form of artificial eye.

Mr. Richardson Cross (Bristol) opened the discussion on Iridocyclitis. He first briefly discussed the anatomy and physiology of the ciliary body, and then went into the pathologic results noticed in disease and inflammation of it, from a simple catarrh, which, as a rule, got well, to the more violent form of cyclitis and chorioiditis. As regards tension, this was usually low at first, but in severe cases it soon became raised and finally, from atrophy of the tissue, it fell again.

Iridocyclitis was usually the result of constitutional dyscrasia, depending on organisms, an incident in general infection rather than a disease, such diseases as syphilis, tubercle and rheumatism producing it. It was sometimes seen in albuminuria and diabetes, and might complicate the toxemia of gastrointestinal or vaginal inflammations, or be caused by pyorrhea alveolaris, or sepsis in the nose and accessory sinuses, and finally wounds were a frequent cause.

The treatment was next mentioned, and the use or otherwise of subconjunctival injections was discussed. Mydriatics were essential, and the increased tension due to exudation was sometimes at once relieved by it. There was no sound reason for myotics, even when the tension was high, as paracentesis followed up with atropin was the correct treatment, and, besides lowering tension, paracentesis encouraged the flow of antibactericidal substances from the blood into the aqueous, and also allowed the escape of bacteria, toxins and unhealthy secretions. It was sometimes of use even when the tension was low, and it could be repeated without fear of danger. At times iridectomy might be required, but it should not be done during the acute attack, but after the eye became quiet. He admitted the great value of iridectomy in lessening the attacks, or even in arresting the disease, and also in improving the nutrition of the eye. The cause of the disease should be carefully sought for and treated, for without it local remedies alone were unlikely to bring about a cure.

Mr. Holmes Spicer said that as regards rheumatic iritis he had seen it produced by the injection of the rheumatic streptococcus in animals, but the appearance of the iritis was very different from the ordinary rheumatic iritis which was so commonly seen clinically. The experimental variety closely resembled that seen in pyemia. In chronic cases iridectomy did but little good, as the coloboma closed afterward, but in recent cases it was most valuable. He thought that eserin was to be avoided in all these cases.

Mr. J. Herbert Parsons confined himself to the pathology, etiology and treatment of the disease. In the absence of other evidence of infection, the intestinal tract was probably the source of mischief, and he thought that calomel should be given and should be followed up by intestinal antiseptics, e. g., naphthol, guaiacol carbonate, etc. Locally he had seen excellent results from dionin, and the deposits on the back of the cornea (keratitis punctata) had cleared up in a remarkable manner. He deprecated paracentesis, as he considered it wrong theoretically and relatively unsatisfactory in practice. He relied largely on prolonged and energetic treatment with hot baths, diaphoresis with pilocarpin, mercurial inunctions, potassium iodid by the mouth, etc.

Mr. Roper (Exeter) said he should wait from 6 to 12 months before doing iridectomy. Mercury inunctions were of the greatest use, and he was much impressed with the action of iodipin.

Mr. Hern (Darlington) seldom did iridectomy in sympathetic cases, for the coloboma usually closed again, and in the end the condition was rather worse than before.

Mr. Devereux Marshall quite agreed that the use of atropin was essential, and if the tension was high he should do paracentesis. Eserin was wrong theoretically and never did anything but harm in these cases.

Dr. Reber (Philadelphia) thought the general state producing the condition was very apt to be overlooked by ophthalmic surgeons. Such patients should be briskly purged with calomel, and this should be followed up with a course of mercury. In rheumatic affections, subconjunctival injections were of little value, but were often useful in the quiescent stages of plastic iritis. Later on he advocated iridectomy, followed up with mercury internally and subconjunctival injections.

Lieutenant-Colonel Herbert (I. M. S.) referred to plague as a frequent cause of destructive iridocyclitis in India, often leading to perforation of the sclerotic in the ciliary region. Mercury was most useful internally in nearly all cases. If tension was present, one properly performed tapping usually reduced it permanently. He entered the knife on one side of the anterior chamber, made a counter puncture on the other side, but only through the sclerotic, and not through the conjunctiva; by slightly twisting the knife the aqueous escaped subconjunctivally. In older people many of these cases were closely allied to primary subacute glaucoma.

Mr. Cross replied.

Lieutenant-Colonel Herbert (I. M. S.) read some clinical observations on spring catarrh, in which he analyzed 39 cases seen in Bombay during two and a half years. Only 7 of the patients were females, and no patient was above 40 years of age. The older patients had the milder attacks. In one case a youth, aged 21, who had suffered from the disease since childhood, the vision was much reduced by invasion of the cornea. The patients were of all races, including Europeans. No cases were seen during May, the hottest month, and most occurred during July, the wettest month, though all months other than May produced some cases. He then entered fully into the differential diagnosis of the disease. In cases of doubt, the diagnosis could always be settled by the presence of eosinophiles in the membranous discharge, these cells being found in enormous numbers, but unevenly distributed, though freshly formed exudation should always be taken, owing to the ease with which the cells break up. Fluorescin staining points, as described at the Swansea meeting of the Association a few years ago, were numerous and characteristic in some limbus thickenings.

Sometimes there was slight nasal catarrh present, and fresh mucus from the nose sometimes contained eosinophiles.

Treatment was not satisfactory or uniform in results, which pointed to the author's belief that the conjunctivitis is only a part of a diffuse malady. He generally used a saturated solution of salol dissolved in almond oil, instilled six times a day.

Mr. Sydney Stephenson alluded to the coincidence of a skin affection occuring with spring catarrh, and probably the two conditions were of the same origin. He thought the diagnosis was difficult only when one eye was affected.

Mr. Richardson Cross (Bristol) said that the disease was rare in the west of England. He had seen a typical case in a boy, aged 15, and he was always worse in the spring and hot weather. Another case occurred in a gentleman, 35 or 40 years of age, but this was not so typical as the former case, and he felt some doubt as to the diagnosis.

Mr. J. H. Parsons thought that the experience at Moorfields was that the disease was rare in England, though doubtless some cases were mistaken for trachoma. He doubted if the presence of eosinophiles was absolutely pathognomonic.

Colonel Herbert, in reply, thought that the disease was probably commoner than was suspected, but he considered that the character of the cells in the discharge was conclusive evidence of the disease.

Dr. Hill Griffith (Manchester) read notes of a case of Orbital Thrombosis which proved fatal. The notes were by Dr. Ernest Smith (Hyde). The patient was a man, aged 25, who, after working on a roof all afternoon, had to lie down afterward on account of pain in his eyes. He had nose bleeding. The pain got worse the next day and the eyes became swollen. Three days later the left eyeball was prominent and the skin red and edematous. This got worse, and two days later the right eye became affected. The fundi were normal. The diagnosis was made of orbital and sinus thrombosis. The patient died on the eighth day of the illness. An autopsy could not be made, but the diagnosis of sinus thrombosis was made with certainty from the fact that protrusion of the second eye took place and that there was edema of the mastoid region. Dr. Hill Griffith had previously published a similar case in vol. iii of the *Ophthalmic Review,* 1884.

Mr. Herbert Parsons said that distension of the retinal veins did not take place in this condition, as was usually stated, and Percy Flemming had noticed that the first sign of involvement of the opposite sinus was paralysis of the sixth nerve of that side.

Dr. James Hinshelwood (Glasgow) reported four additional cases of congenital word-blindness occurring in the same family. These children all had the greatest difficulty in learning to read and could not recognize words when they saw them, written or printed. The first case was a boy, aged 12, who could not recognize all the letters and was quite incapable of reading even monosyllabic words. The second, aged 14, had been at school for nine years, and, although quick in all other school subjects, including arithmetic and writing, he was word-blind. He was now slowly improving and could read short words if allowed to spell them. The third case was a boy, aged 18, who was at school for seven years and left without being able to read even a child's first primer. His arithmetic was excellent. Since leaving school he had taught himself to read football news, but could scarcely read anything else. The fourth patient was 16 years of age and was nine years at school. He left without being able to read and had now quite given up any attempt to do so. He insisted on the necessity of educating such children alone, for in classes and ordinary schools they would never improve.

Mr. Holmes Spicer had seen a case two years ago complicated with astigmatism and a high refractive error. He expected he would improve after correction, but he had since heard that he could not read at all. Doubtless it was a case of congenital word-blindness.

Mr. Elliot Square (Plymouth) had reported a case of a coachman, aged 50, who had never been able to read, not even the names of streets, and consequently he made great mistakes in new neighbourhoods. If sent to pay bills, he was always able to do it well and never made mistakes with the change.

Mr. Sydney Stephenson mentioned the case of a family of eight, in which three girls and one boy suffered from congenital word-blindness.

Mr. Cyril Walker commented on the great similarity of all the recorded cases and said that minor degrees of word-blindness seemed to be relatively infrequent. He instanced the case of a boy, aged 10, who, though excellent at arithmetic, was almost incapable of reading.

Mr. R. J. Coulter read a paper on the treatment of alternating squint. The first case he recorded was that of a boy, aged 14, who commenced to squint when 4 years of age. His refraction was R. + 3.5, L. + 2.75, and vision of both eyes perfect. An attempt was made to restore binocular vision by orthoptic treatment, but no fusion was possible. After an advancement and tenotomy, good fusion and stereoscopic vision was obtained. He reported four other somewhat similar cases. He had notes of four other cases in which he had failed to restore binocular vision of such a quality as to keep the eyes straight, but he had never failed to obtain fusion of stereoscopic pictures after correcting the deformity by operation. In dealing with alternating squints he considered the best course was to correct the deformity by operation and as soon as possible to start training with the amblyoscope or some other form of stereoscope, and that the most suitable age for undertaking this treatment was between 12 and 16 years.

Mr. Holmes Spicer opened the discussion on Vesicular Affections of the Cornea. He first entered into the anatomy and physiology of the corneal epithelium and noted the fact that it could so easily be stripped off Bowman's membrane. In reptiles which periodically cast off their epidermis the epithelium of the cornea was cast off, too, and its periodic detachment in bullous keratitis might be a repetition of this process. Examples were given of its general and partial exfoliation. Even in normal corneæ its sensitiveness varied markedly, but when ulceration was present pain reflex was often defective. This was frequently the case in the other eye, which had no ulceration. In some cases, instead of a superficial affection, deep or interstitial keratitis, iritis cyclitis and diminished tension might occur. These were of trophic or of nerve origin. The same sort of thing might occur in the terminal branches of the nerve, as well as in the nerve trunk, such, for instance, as febrile herpes, dendritic ulcers, and filamentary keratitis.

In febrile herpes the skin was mostly affected about the lips, etc., but it might occur on the cornea. A case was mentioned in which a patient had suffered from numerous dendritic ulcers of the cornea. He got an attack of febrile herpes on the nose, followed by a large crop of corneal vesicles.

Filamentary keratitis was considered to be a form of herpes, the filaments being epithelial cells twisted up like a rope.

Dendritic ulcers were next discussed and their treatment mentioned. Relapsing bullous keratitis was next considered and the unsatisfactory nature of the treatment was remarked on. The best plan was to remove carefully all traces of loose epithelium and to secure rest by a compress of atropin. Caustics and other measures frequently failed to prevent relapses. The free use of dionin had done good, but Mr. Spicer urged the necessity of removing the epithelium at the site of the bulla, down to the basement membrane. The general health had carefully to be attended to and restored to normal vigor.

Superficial punctate keratitis was discussed, and it was considered as belonging to a separate group and to be a catarrh of the whole conjunctiva which was found to have its own organism.

Dr. John Cropper (Jerusalem) called attention to a condition seen in bad cases of trachoma with much infiltration of the cornea by trachomatous tissue. The cornea became gray and infiltrated, and the condition generally led to blindness. In such a case in Palestine he had had an excellent result with the actual cautery.

Mr. Ransom Pickard said that the behavior of cases of relapsing bullous keratitis suggested that during healing micro-organisms might get enclosed beneath the epithelium. It would be worth while, in cases of injury from obviously septic things, such as a baby's finger nail, a twig, etc., to treat the abrasion by scraping or the application of strong antiseptics.

Dr. de Silva (Colombo) read a paper on Lepra Ophthalmica in Ceylon. The leper asylum there contained now 500 cases, and, of these, 101 suffered from eye symptoms. He examined all these cases and found that 23 suffered from lepra tuberculosa, 33 from lepra anesthetica, and 45 from lepra mixta. The most important lesion in the lepra tuberculosa was a tubercular episcleral growth, which usually started on the outer circumcorneal region, and it took months to involve the cornea, while the pupil showed a tendency to be irregular and to be dragged toward the nodule. The average duration of these cases was nine years. The vision remained remarkably good, and in five cases only was the sight materially affected. Lepra anesthetica had an average duration of fourteen years. The patients were older and the disease lasted longer, one patient being 87 years of age, and he had had the disease forty-five years.

Most of the corneal complications occurred when there was lagophthalmos, due to paralysis of the facial nerve.

He concluded that the commonest specific lesions were found only in lepra tuberculosa, but the percentage was small. In lepra anesthetica there was no primary lesion in the eyes. The few cases there were of cataract did not show a greater percentage than in the same class of people in Ceylon generally. He then gave details of 17 typical cases.

Mr. A. Fergusson MacCallan gave an interesting account of the origin and present organization of the ophthalmic hospitals in Egypt. The hospitals were founded in 1903 by Sir Ernest Cassell, G.C.M.G., who gave £41,000 for the ophthalmic relief of the necessitous inhabitants of Egypt. A traveling ophthalmic hospital was organized, and Mr. MacCallan was appointed ophthalmic surgeon and inspector. His duties were to organize and administer an ophthalmic hospital and to train in ophthalmic surgery Egyptian doctors attached to it. On his arrival he made a tour of the Egyptian Delta, and at each town he treated many cases and familiarized himself with the condition of work which would have to be carried on. The operations and treatment were performed and carried out in tents, and about a third of the cases required operation, while about 40 per cent. had trachoma. He then described the usual daily routine. The scheme was a complete success, and there never was the slightest hesitation on the part of the people to visit the hospital nor to submit to any operation which might be proposed.

Owing to the further liberality of Sir Ernest Cassell, a second hospital had been established, and now one works in Upper Egypt and another in Lower Egypt. The Egyptian government had since adopted the policy of building ophthalmic hospitals, one or more yearly, as funds permitted. He hoped that in the course of fourteen years they would have a special ophthalmic hospital in the capital towns of each of the fourteen provinces of Egypt.

During the year 1906, 40,103 patients were examined at the hospitals and, of these, 7,327 were admitted for treatment either as in- or as out-patients; 5,846 operations were performed on 2,649 patients; 8 per cent. of patients had trichiasis or entropion. Cataract and glaucoma were common. He then described some of the operations he commonly performed and gave his opinion as to the best treatment for certain diseases. After this he showed some most interesting lantern slides illustrating the way in which work was carried out in the traveling hospitals.

Dr. John Cropper (Jerusalem) congratulated Mr. MacCallan on his excellent work and thought that such work was calculated to do an immense amount of good, not only to the patients, but it would act as a means of reconciling the people to British rule.

Mr. C. A. Roper (Exeter) read a paper on Prolapse of the Iris in Simple Cataract Extraction. He said that at the Exeter Eye Infirmary it had been the practice for thirty years to do the simple operation, and only to do iridectomy in exceptional cases. The late Mr. Boukart, whom he (Mr. Roper) succeeded, was an unswerving champion of the simple operation. He described the operation as he usually performed it, and said that if on the third or fourth day prolapse of the iris took place and was extensive he should remove it, but if it were only slight he should leave the cure to Nature and possibly excise the cystoid scar later if it were causing irritation. He described a typical case and stated that he had seen no case of iridocyclitis or suppurative infection following a prolapse.

Mr. Devereux Marshall said he frequently did the simple operation, but he never would leave an iris unless it went back perfectly, as such cases always prolapsed within a few hours. What he considered the great advantage of the simple operation was the fact that the capsule was less likely to get drawn up to the wound than if an iridectomy were done. He spoke strongly in favor of removing a prolapse at the earliest possible moment.

Mr. R. J. Coulter (Newport) preferred a peripheral incision to one in the cornea, and had seen four cases of prolapse with the former section. He would prefer to excise all prolapses.

Mr. Brewerton thought that for a prolapse to occur on the seventh or ninth day was most extraordinary. The chief danger of prolapse was, in his opinion, the likelihood of the capsule being brought up and included in the wound. He considered a prolapse of the iris after cataract extraction was one of the most fertile sources of sympathetic ophthalmitis.

Mr. Elliot Square (Plymouth) thought that one of the great advantages of the simple operation was the cosmetic effect, and in order to make the eye look as nice as possible it was sometimes desirable to avoid iridectomy.

Mr. Roper replied.

Dr. Thomson Henderson (Nottingham) read a preliminary communication on the Pathogenesis of Glaucoma and the Rationale of Its Treatment. He held that the causal factor of glaucoma existed in a primary obstruction and closure of the pectinate ligament, due to sclerosis of the fibrous structures about the filtration area. All other changes were secondary to this. He then went into the anatomy and physiology of the parts involved. The hindrance to the aqueous outflow did not arise from the peripheral anterior synechia so frequently met with in glaucoma, which he looked upon as secondary only; but it was caused by the closing of the interspaces of the pectinate ligament in consequence of the fibrosis of the cells of its connective tissue stroma and formation of a homogeneous membrane around these fibrous bundles, leading to the endothelial cells being just brought into contact and then welding together the fibrous structures. The iris, in addition, was not only a diaphragm, but an absorbing surface accessory to the pectinate ligament, and when the latter was obstructed the iris had to do the whole of the drainage. When the pupil became dilated, its area was lessened and the crypts near the pupil were closed; thus the blocking of the angle of the anterior chamber was a consequence of the acute iritis edema, and not the cause of the glaucoma. The edema of the ciliary body relaxed the suspensory ligament, thus allowing the lens to become more globular and consequently causing shallowing of the anterior chamber. By modification of these processes, acute, subacute and chronic glaucoma were explained.

The reason why myotics caused diminution in tension was because the crypts in the surface of the iris became open and the aqueous was able to find its way out. Mydriatics did the reverse of this. After an iridectomy, the stump of the iris showed no signs of healing, and even years afterward the appearance of the cut edges was as if it had been done postmortem, and thus the operation opened up permanent channels for the fluid to drain away and would always be effective unless the iris tissue was too atrophied and degenerated.

Mr. Parsons thought that too much stress had been laid upon the absorption function of the iris in Dr. Henderson's theory, and he was doubtful whether this was not a secondary rather than a primary cause of the glaucoma.

Mr. Richardson Cross gave details of a case which supported Dr. Henderson's theory.

Dr. Henderson replied.

C. Devereux Marshall, F.R.C.S.

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

Dr. Assicot has been made professor of ophthalmology at Rennes.

Dr. Clarence Heath of Chicago, has gone to England for a two months' trip.

Dr. H. S. Birkett, of Montreal, Canada, has returned after an absence of several months spent abroad.

Professor Greef, of Berlin, has refused a call to become professor of ophthalmology in the University of Kiel.

Frau Hirschberg, wife of the celebrated Berlin ophthalmologist, Geh. Med.-Rat Prof. Dr. J. Hirschberg, died in Berlin July 7, 1907.

Drs. Ernest F. MacVane and Magnus G. Ridlon have been appointed house physicians to the Maine Eye and Ear Infirmary, Portland, Maine.

Dr. E. V. L. Brown, of Chicago, has gone to Europe, where he will spend the winter in research work. He intends to return to Chicago in April.

Dr. John Grimshaw, of Birkenhead, England, has received the appointment of assistant ophthalmic surgeon to the Stanley Hospital in Liverpool.

Among the list of the first officers of the Academy of Medicine, Toronto, Canada, are the names of Dr. R. A. Reeve as councilor and Dr. E. Stanley Ryerson, secretary.

The first annual meeting of the Chicago Ophthalmological Society will be held Oct. 14, 1907, at the Northwestern University Building, Lake and Dearborn streets.

At the annual meeting of the Ohio State Medical Society, Dr. Horace Bonner, of Dayton, Ohio, was elected delegate for two years to the American Medical Association.

Dr. R. A. Reeve, of Toronto, Canada, formerly president of the British Medical Association, was made a vice-president for life at the annual meeting held at Exeter, England.

The city of Montreal, Canada, is again taking up the work of school inspection. Forty-five physicians, as far as possible to be selected from those who did similar work a year ago, will begin work at once.

Dr. G. Oram Ring, of Philadelphia, has returned from his camp at Eagle Lake, in the Adirondacks, where he spent the past summer, and has taken new quarters for his office and residence at 2011 Chestnut street.

Dr. Richard Reeve, of Toronto, and Dr. Herbert Birkett, of Montreal, were among the visiting physicians at the meeting of the British Medical Association at Exeter, England, the former officiating as president.

Mrs. Leartus Connor, wife of the well-known ophthalmologist, of Detroit, Mich., died recently at her home in that city. The Record staff takes this opportunity to express its sympathy with Dr. Connor in his bereavement.

The building at 36 Karlstrasse, Berlin, so long occupied by Prof. Hirschberg's Eye Clinic, has been torn down to make room for a new and modern hospital which will be directed by Professor Hirschberg and Dr. Wilhelm Muhsam.

A special course of study has been arranged for medicolegal experts in France, and the justices of the peace have been instructed to select their experts from the graduates. The idea is being much criticized, it being contended that specialists should be called in all cases involving the eye, nervous system, etc.

SIGHT AND HEARING OF SCHOOL CHILDREN.—The New York state health and educational departments will act jointly in testing the sight and hearing of the school children in 5,000 school rooms in the incorporated villages of the state. The teachers will conduct the examinations of all children over 7 years of age. Eventually the tests will be extended to all schools in the state. This work should be systematically performed in every state in the Union. Medical energy, broad-mindedness and united effort will effect it.

FIELD SPORTS FOR THE BLIND.—The Lake Side Outing Club for the Blind is entertaining thirty sightless people from Chicago this week at its camp at Whitefish Bay, Wis. Field sports, games, water pastimes and music are diversions which the blind are enjoying in full measure. The camp is under the supervision of the School for Those Having Defective Vision, Hearing or Speech, a philanthropic Milwaukee institution. The school is conducted by Alice Burnham Fellows, and has on its staff a number of well-known physicians.—*Chicago Tribune.*

AT THE meeting of the Ophthalmological Society of the United Kingdom in London, England, July 12, 1907, the following officers were elected for the ensuing year: President, R. Marcus Gunn; vice-presidents, Sir John Tweedy, G. Sims Woodhead, A. Hill Griffith, E. Treacher Collins, W. Adams Frost, George Mackay, W. H. H. Jessop, R. A. Reeve and Priestley Smith; treasurer, J. B. Lawford; librarian, W. T. Holmes Spicer; council, A. Freeland Fergus, J. C. Uhthoff, Rayner D. Batten, L. Vernon Cargill, A. S. Percival, J. S. Risien Russell, Cecil E. Shaw, W. G. Sym, Harold Grimsdale, W. T. Lister, C. Devereux Marshall and Cyril H. Walker; secretaries, T. E. Batten and J. Herbert Fisher.

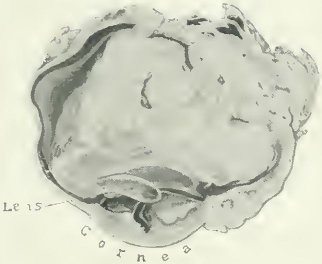
THE TRAIL OF TRACHOMA.—Extract from an interview with Frank P. Sargent, Commissioner of Immigration, published in the *Saturday Evening Post:* Trachoma is one of the most frightful of eye diseases and exceedingly contagious. So widely does it prevail in the south of Europe that at the port of Naples, where our government maintains a medical officer to examine embarking emigrants bound for the United States, twenty thousand such emigrants were rejected on this account during the last year. For fear of this complaint, no family in southern Europe which can afford to pay for tuition will send its children to a public school. Should it become general in large cities of this country—and it is said that our climate favors its spread—it would almost destroy the value of the public-school system.

SIR ERNEST CASSELL has given the Egyptian government $300,000 to establish traveling ophthalmic hospitals.

The government at Cairo accepted the offer gratefully, and the health commission of the Ministry of the Interior entrusted Dr. MacCallan, a London oculist of distinction, with the organization of the service. It must not be assumed that the "automobile clinic" of the English practitioner is so comfortably arranged as that once built for the Prince of Oldenburg by Mr. Jeantaud. When Dr. MacCallan and his aids travel, their caravan is more like a military or a gypsy camp.

They carry with them tents which were pitched for the first time on the outskirts of the populous city of Menufieh in the Nile delta, and they chiefly treated the ophthalmia due to the impalpable dust raised by the terrible khamsin, a burning wind that blows with violence in Egypt during fifteen days at the time of the equinox.

The traveling hospital as organized by Dr. MacCallan consists of twelve tents. In the largest of these the surgeon performs operations; in a second he lives, and the others shelter his native assistants, the patients, and the nurses. The climate of Egypt sometimes makes the nomadic life uncomfortable. In January the cold is much sharper on the banks of the Nile than in France or England, while in June the heat melts butter in the pots where it is kept. Thus operations can not always be performed in the open air, and Dr. MacCallan was obliged to abandon his traveling clinic temporarily in July, transferring his patients to the government hospital at Damietta. When the heat of the sun had moderated, the practitioner resumed his ophthalmoscope and other instruments and organized another traveling hospital, which he took to Caliub in Lower Egypt. At present, as we learn from our contemporary *Le Caducee*, the hospital, directed by Dr. MacCallan in person, is in the wonderful oasis of Medinet-el-Fayoum, and in the course of the last year 18,943 Egyptians have resorted thither for the treatment of some malady of the eye. Other traveling hospitals are in preparation, and this institution has had the honor of an official visit from Lord Cromer, the representative of England in Egypt.—*The Literary Digest.*



To accompany article by **Dr. Samuel Theobald**, Baltimore, Md., in October number of *The Ophthalmic Record*—"A Case of Intraocular Tuberculosis which Closely Simulated Glioma of the Retina."

THE
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Original Articles.

A CASE OF UNILATERAL NYSTAGMUS BENEFITED BY TREATMENT.*

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BOSTON.

The following case of unilateral vertical nystagmus is reported chiefly to call attention to a method of treatment which gave a satisfactory result, and which it is hoped may prove of equal value in similarly selected cases. It has also seemed well to add this to the list of reported cases, that it may contribute, perhaps, to the solution of the difficult problems relating to the etiology of nystagmus.

Mary S., aged 18, first seen Nov. 1, 1903. Mother and father not related and have normal eyes. Two sisters have normal eyes. One brother, aged 14, has had marked convergent strabismus since 5 years of age, but no nystagmus. Patient has always been healthy and has had no severe illnesses. She is above the average in intelligence and made good progress at school. She states that her right eye was first noticed to turn in when she was 7 years old, and that the nystagmus was not noticed until she was 15.

Examination.—Media and fundi of both eyes normal. Pupillary reactions normal, no hippus. Refraction under homatropin.

R. + 1.50s + 1.25 cyl. ax. 60° = 20/40 —
L. + 2.25s + 0.37 cyl. ax. 120° = 20/15 —

The right eye shows a convergent strabismus of 52 prismatic diopters measured by the objective cover test. Subjective tests show paradoxical diplopia. Thus, a 20 prismatic diopter prism base out, which, as shown by the cover test, does not correct the squint, produces crossed diplopia. The diplopia tests (vertical prism or

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*Read before the American Ophthalmological Society, Washington, May, 1907

Maddox rod) indicate approximately 10 prismatic diopters of esotropia, the patient being unable to locate accurately the relative positions of the two images. With both eyes uncovered, right eye shows constant vertical nystagmus, with or without correction of refractive error. When the left eye is covered so that the right is compelled to fix, the nystagmus immediately ceases. The left eye under cover remains free from nystagmus. The nystagmus shows a practically constant frequency of about 200 oscillations per minute, the amplitude of each being about $^3_4$ mm. On forced movements of the eyes in any direction except upward the nystagmus ceases. It also ceases when an object is brought very close to the eyes, that is, during forced accommodation, whether the right eye is covered or not. When patient allows eyelids of both eyes gently to close, both upper lids quiver as if involved in the nystagmus, the left eyelid much more markedly than the right. Each eye shows normal color perception, and no foveal scotoma can be made out in either eye. Dr. W. N. Bullard, who kindly made a careful neurological examination, reports that the patient shows no evidences of organic disease. Full correction, less + .75s., ordered for constant use.

Nov. 3, 1903. Free tenotomy of right internal rectus. Four weeks later, when the esotropia had decreased to 30 prismatic diopters, advancement of right external rectus performed. After one week the esotropia was found to be only 9 prismatic diopters. Nystagmus unchanged.

Dec. 18, 1903, three weeks after the advancement. Occasionally has spontaneous diplopia, during which the left image "jumps." Nystagmus unchanged. Cover test shows esotropia of only 5 prismatic diopters. Maddox rod shows crossed diplopia. With 20 prismatic diopters prism base in and Maddox rod, the patient is unable to say which side of light the streak is on, although the two appear some distance apart. With red glass before left eye, two images are seen. When patient looks at the red image, the white image oscillates vertically. When she fixes the white image, the red remains motionless. In order to induce the right eye to fix, the visual acuity of the left was now reduced by adding +2D to its spherical correction.

Jan. 7, 1904, three weeks later, the cover test shows parallelism of visual axes. Patient still fixes with left eye most of the time in spite of the blurring glass, and the nystagmus still persists. The left glass was now smeared with vaselin, thus practically excluding the left eye from vision. The right eye, therefore, being compelled to fix, the nystagmus ceases.

After keeping the left glass smeared with vaselin for five weeks it is found that this additional procedure is no longer necessary, and that the blurring glass before the left eye is alone sufficient to ensure fixation by the right eye and to cause the nystagmus to cease. Since, however, the visual acuity of the left eye is enhanced rather than decreased for near vision, this eye is used for reading, during which the nystagmus reappears.

Nov. 17, 1905, over two years after the treatment was begun, the condition last noted remains essentially unchanged. The visual axes are still parallel. The visual acuity of the right eye has slightly improved, to 20/30 —. Nystagmus is absent in distant vision with the glasses and present in near vision or when the right eye is covered.

Although in this case the patient stated that the nystagmus had been present only since she was 15 years of age, it is not unlikely that it had really existed, perhaps in a less pronounced form, long before that time, but had been unnoticed. At any rate, in view of the fact that a thorough neurological examination gave no evidence of organic disease, it seems clear that this belongs to the so-called congenital nystagmus, the cause of which is believed to be congenital, although the nystagmus may not manifest itself until some time after birth. This classification at least serves to distinguish such cases from the acquired form due to organic brain disease and also from occupational nystagmus.

The satisfactory result of the treatment was no doubt dependent upon four factors, namely, the unilateral character of the nystagmus, the good visual acuity of both eyes, the absence of the function of binocular single vision, and, most important of all, the cessation of the nystagmus during fixation with the affected eye. The treatment consisted in taking advantage of the latter fact by inducing the nystagmic eye to fix in distant vision. This was accomplished by increasing the power of the spherical glass for the normal eye sufficiently to reduce its visual acuity below that of the nystagmic eye. To accustom the patient to use the nystagmic eye in this way, however, it was necessary at first to reduce still further the visual acuity of the normal eye by smearing its glass with vaselin. After the use of the vaselin was discontinued the patient always used the nystagmic eye for distant vision and thus was free from nystagmus, except in near vision, when the normal eye was used.

In this connection I should like to call attention also to the advantage to be derived from making use of this procedure in any case of strabismus or anisometropia in which there is good visual acuity in each eye, but in which the function of binocular single vision is absent. By compelling the patient to use one eye for distant vision and the other for near vision, reading is made less of an effort to him owing to the assistance of the strong convex glass, and, moreover, when presbyopia sets in one pair of glasses still suffices for both near and distant vision. Such a patient thus is given at least one decided advantage over an individual with normal eyes, for in the case of the latter it is, generally speaking, not feasible to assist the accommodation before the presbyopic age is reached, if only on account of the disturbance that would be produced in the relation between accommodation and convergence. Occasionally in anisometropia the patient has already unconsciously learned to use his eyes in this way. Here especially it seems to me that it is a mistake to attempt to correct the anisometropia, but that the glasses should be so adjusted as to confirm the patient in his habit.

In regard to the etiology of unilateral nystagmus,[1] this case presented one feature that seems to be of considerable significance, namely, the nystagmus, if such it may be called, that manifested itself in both upper lids when the latter were allowed to close. It will be seen that this lends strong support to the view upheld by several observers that unilateral nystagmus does not differ essentially in origin from the bilateral form, and that, in fact, a careful examination will in many cases show a slight nystagmus in the apparently normal eye. In this present case, however, repeated examinations failed to show the slightest nystagmus in the left eye itself, so that this case serves in addition to demonstrate that even when the cause of the nystagmus is acting on both eyes, on one of them its effect may be perfectly inhibited. That nystagmus was completely absent from the left eye in this case was also indicated by the subjective tests. Thus when diplopia was produced with the right eye fixing, both images remained still, whereas with the left eye fixing the image pertaining to the right eye continually "jumped."

Assuming, then, that the cause of nystagmus acts upon both eyes, whether or not the nystagmus itself is unilateral, the present case, and others similar to it, may possibly be explained as follows: There is first a cortical lesion, probably congenital in origin, that tends to produce nystagmus in both eyes. This is associated with, although independent of, an absence of the function of binocular single vision which leads to the development of squint. Owing to one eye being now used for fixation, its tendency toward nystagmus is fully compensated for. On the other hand, the squinting eye never being used for fixation, its tendency toward nystagmus is allowed to become manifest.

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[1] For a recent review of the literature on nystagmus, see paper by Alexander Duane, the New York Journal of Medicine, July, 1905.

THE RADICAL CURE OF VERNAL CONJUNCTIVITIS.*

L. Webster Fox, A.M., M.D.

PHILADELPHIA.

This is a somewhat infrequent affection of the conjunctiva and is rather difficult to properly name and classify, as it is so entirely different from any other form of conjunctivitis. It usually affects both eyes and, while it is more frequently found in the young, yet persons of middle age are not exempt. The peculiar characteristic is its chronic course, for, notwithstanding all topical treatment, the disease returns promptly each year for many years.

Symptoms.—The disease, which makes its appearance with the first warm days of spring, is characterized by excessive and almost intolerable itching. The conjunctiva is slightly swollen and has a bluish-pink tint, and that of the tarsus is covered with broad, flattened papillæ, while brownish, uneven, hard nodules of gelatinous appearance grow upon the bulbar conjunctiva from the limbus of the inner and outer side of the cornea. These changes in the bulbar conjunctiva are not so constantly produced as those in the tarsal conjunctiva. No pain is experienced, although the itching is intolerable and photophobia causes the patient a great amount of distress. The excessive itching of the eyeball is the most characteristic symptom and lasts for weeks. The effort to gain relief by constant rubbing increases the injection, the swollen conjunctiva assuming a bluish-pink tint around the cornea, and it is with much difficulty that the eyelids can be kept open. This condition lasts as long as the warm weather continues and rapidly disappears when there is a drop in the temperature.

I take the liberty of quoting an abstract of a letter received from a very intelligent patient who has been a martyr to this disease for over ten years. The description of her torture is so well described that I am sure you will be interested in her narrative:

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* Read before the Medical Society of the State of Pennsylvania at Reading, Sept. 25, 1907.

"To begin with inheritance, my father has had a most aggravated form of catarrh of the head for thirty years. Any change in the weather or change of climate brings on paroxysms of sneezing, watery discharge, itching membrane in the nose, and blood-shot eyes, and, being a physician, he has tried every remedy to no satisfactory end. My trouble with the eyes began the second summer I spent in Philadelphia (1896). I attribute the beginning of the malady to riding in open cars in hot weather, hatless and thinly dressed. I have never had any nasal troubles, but all the ailment seems to center in my eyes. Each April my eyes become blood-shot and itch so frantically that with each attack I rub my eyes with all my strength to satisfy the itching corneæ and the inside of the upper lids. I first notice that alighting from a trolley car into the hot streets starts the itching and rush of blood to the eyes. I also notice that there is never any discharge until after I have rubbed my eyes frantically for days and weeks; then a watery fluid oozes out and often a thread of mucus blurs the eyesight, and by picking up an end of this thread I find it is attached to the upper lid. I was told this was "spring catarrh," but it lasts always until the first of October. If I am very warm and sit on the veranda to get cool the blood-shot condition can be noticed coming on and then a fearful itching. If I sleep by an open window the irritation awakens me from a sound sleep. I had my vision tested with the greatest care and skill and found it perfect and the nerves of the eyes good. The under side of the lids have been scarified by two different oculists, which only aggravated the itching and caused the lids to puff up when the attacks came on. I tried an ocean voyage, but the dampness and stiff winds, as well as the rich foods, kept me in a still worse condition. Vegetable diet and internal remedies were resorted to with no good results. Upon the approach of October my eyes would clear up, whiten, and all of the conditions pass away. Two years ago, while confined to bed for four months, from April to July, I experienced no trouble with my eyes. So long as my body is cool no congestion or itching is noticed. Swimming was even resorted to, and it was found that so long as I remained in the pool the conditions were normal, but after the circulation of the blood began and the body again became heated the irritation reasserted itself. Steam-heated houses always bring on the distress, even during the winter months. Besides the different specialists of this country those abroad have been consulted without deriving any benefit. Most of the foreign ophthalmologists have stated that they never have had a patient with the conditions corresponding to mine."

The narrative of this patient is the history of all my twelve cases to a lesser degree; none had so exaggerated a form, though all complained of the intolerable itching that accompanied this disease after the first warm days in April.

Etiology.—According to Dr. Cheatham, little or nothing is known concerning the etiology of the disease. He believes that the disease is sporadic and non-contagious. The latter being true, he says he makes it of much importance to obtain a correct diagnosis, and that the bulbar form offers a better prognosis than the tarsal. His observation has been that the disease may, and often does, last for years.

Thaler has examined microscopically bits excised from a conjunctiva affected with this disease and he finds that the epithelium takes no share in the process. The mass of the granulation is made up of fibrous tissue strands containing large membranes of lymphocytes and many mast cells. He has not found yellow elastic tissue predominating, but there is present much hyaline degeneration, and, having regard to the class of patient in whom this disease occurs, he is of the opinion that it is of the nature of a lymphadenoid disease, which frequently shows itself by enlargements of the glands and elsewhere.

Goldzieher has made similar observations with like results, and Prof. Dr. F. Schieck,[1] who has contributed the last and best study of this disease, makes similar observations.

Pascheff has made a clinical and pathological study of "spring catarrh" based on 93 cases and illustrated by microphotographs. His findings and conclusions are those recorded by previous writers. He draws especial attention to the sleepy look of many patients suffering from "spring catarrh," an appearance due to the drooping of the affected upper eyelid. He also associates the disease with the "lymphadenoid" diathesis, as revealed by hypertrophic rhinitis, enlarged tonsils, adenoids, etc. Pascheff has seen the circumcorneal thickening persist for fifteen years and the characteristic "pavement" condition of the upper lid for as long as nineteen years.

In the *Ophthalmoscope* for April, Dr. Markus has made an abstract of Lafon's article which appears in the *Annals d'Oculistique*, October, 1906, on "A Historical Study of Spring Catarrh (Tarsal Form)." This author also agrees with Schieck in his conclusions that the primary lesion in spring catarrh is the growth of fibrous tissue starting from the superficial layers of the tarsus and uniting into bands which spread forwards, pushing the mucous membrane before them, and that the epithelial changes are secondary. He considers that the cellular infiltration is due to proliferation of the normal subepithelial lymphoid cells, and that the smallness of the number of polynuclear leucocytes present shows that the process is not inflammatory and should be classed as a hyperplasia. The presence of a considerable number of eosinophile cells in all parts of the granulations which had not previously been recorded suggested to the author a connection between the pathological changes in vernal conjunctivitis and in mucopharyngeal adenoid vegetations and hypertrophy of the inferior turbinated bones—conditions which are frequently met with, in association with it, and in which the presence of eosinophile cells has been demonstrated, and an examination of specimens leads him to the conclusion that, in spite of the opinion of Terson to the contrary, there is a very marked analogy between the histological changes occurring in these conditions.

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[1] Beitrag zur Pathologie und pathologischen Anatomie des Frühjahrskatarrhs. Klin. Monatsb. für Augenheilkunde, May-June, 1907.

April 29, 1904, Dr. Harold Goldberg made the following bacteriological report for me in one case:

Microscopy.—Degenerated epithelial cells (granular); blood cells; granular fibrin; hyaline bodies; polynuclear leucocytes; nuclear detritus; streptococcus, etc.

I have not, by any means, made an attempt to review the more extensive literature which has recently appeared on the causation and pathology of this disease, but I have simply given a brief outline of the articles which, to me, contain the best description of its pathology. Dr. J. Hamilton Small, of the Medico-Chirurgical College, has undertaken a special study of the pathology of my cases, but is not ready to make a report at this time.

Treatment.—In reading the many papers issued on this subject, one is impressed with the fact that little or nothing is said about treatment, and when mention is made of it it is always in a discouraging vein. Dr. Posey says, "There is scarcely a drug or a measure which could exert any possible beneficial action on the conjunctiva which has not been essayed."[2]

Dr. Frank Allport speaks of the treatment as follows: "I now beg to apologetically direct your attention to the treatment of this discouraging disease, for up to the present time no one has had sufficient temerity to claim the discovery of a cure."[3] It would be useless to enumerate the many topical remedies that I have tried, and, like other men, have failed ingloriously. The list contained such remedies as boric acid, chinosol, aq. chlorini, ichthyol, various mercurial preparations, dionin, acetic acid, chromic acid, etc. All of these remedies having failed in giving relief and remembering my success with the radical treatment for grattage, I felt that no harm could come from this line of surgical treatment in the cases of vernal conjunctivitis.

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[2] "Vernal Conjunctivitis," Jour. A. M. A., July 25, 1903.

[3] Northwestern Lancet, Jan. 1, 1901.

My first case was one which had resisted all the known remedies, not only at my hands, but also those of other ophthalmic surgeons. I performed this operation very carefully and thoroughly on June 18, 1895. The details are as follows: The upper eyelid is grasped along its margin by Darier forceps, and, the edge being turned upon itself, the lid is everted until the retrotarsal fold is brought into view. A horn spatula should be inserted beneath the lid to protect the cornea. The exposed part is first thoroughly scarified with a three-bladed scalpel. The granular tissue is then scrubbed with a toothbrush, which has been steeped in a corrosive sublimate (1 to 500) solution just before being used. Immediately after scrubbing, the part is washed with a solution of the same strength. Another portion of the lid is now unrolled, and the scarifying and scrubbing and washing repeated until the whole conjunctival surface of the eyelid has been subjected to the treatment. If the lower lid is involved, it should be treated in exactly the same way. I have followed this treatment in twelve cases; in ten cases the disease had not existed for more than five years; in these cases the cure was permanent. In one case the operation was performed twice, and I am awaiting the coming season to see whether the treatment must be repeated or not.

The last patient upon whom I performed this operation was the one whose history I have read in this paper. She was operated upon in the height of this year's attack. For three weeks she had relief; then the attack was almost as severe as ever. The operation was planned for last February, but, owing to a severe illness of a member of the family, which necessitated a trip to Nassau, it was necessary to postpone it. While in Nassau, the patient had a severe attack, due to the warm climate. The failure to give permanent relief to this patient has not discouraged me in the least, and if I can obtain her consent to a second operation I shall again resort to the surgical treatment.

Pascheff, whom I have quoted previously, says that he resorts to the excision of the thickened masses as the best treatment, especially in the obstinate cases.

Dr. Casey Wood stated in a paper read before the Chicago Ophthalmological Society (May 13, 1907), entitled "Unilateral Vernal Conjunctivitis," that he "abscised the cartilage-like masses, under general anesthetic, and curetted their bases." Dr. Wood found that improvement followed the employment of the *x*-rays and topical applications. At this same meeting Dr. F. A. Phillips presented a case of palpebral "vernal catarrh" upon which a complete tarsectomy had been done by Dr. Beard upon one eye and a partial one upon the other after all the usual methods of treatment had been employed. The operation had been attended by improvement.

Jocq's method is first to perform peridectomy, then to apply the thermocautery around the limbus region, which treatment has been successful.

Gradually the operative treatment is being introduced as the only method that will give permanent relief and cure. My experience of twelve years convinces me that the sooner this operation is performed after the diagnosis is positively established the quicker is the cure. If the disease has run a long course, say for ten years, then we must resort to the still more extensive tarsectomy. In the cases refusing the radical cure we must content ourselves with the acetic acid wash (acid acetic. gtt. x, aq. destil. ounces iv; sig., two drops in each eye three times daily). To this solution 5 gtts. are added each day until a smarting sensation is produced. Besides the above solution, chinosol, aqua chlorini and dionin powder, as suggested by Dr. Walter T. Pyle, may give temporary relief.

A RARE TYPE OF PERIVASCULITIS RETINÆ IN A YOUNG WOMAN, THE SUBJECT OF INHERITED SYPHILIS.*

Charles A. Oliver, A.M., M.D.

PHILADELPHIA, PA., U. S. A.

On April 11, 1898, through the kindness of Dr. George R. Rohrer, of Lancaster, Pa., U. S. A., I was permitted to study the eyes of C. M., an unmarried woman, aged 22 years. Dr. Rohrer first saw the patient when she was 8 years old. At that time, careful estimation of refraction with duboisia-cycloplegia gave normal vision in each eye.

Six years later he made note that the fundus of the right eye showed old spots of absorption due to retinitis. Three years after this he found that corrected vision with the right eye had fallen to two-sevenths of normal, and that there were marks of old and new hemorrhages in the retina. In one year's time the vision of the right eye had increased to one-half of normal; three years after this it had receded to two-fifths. The left eye, which always had had good sight, never evidenced any local trouble.

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* Read before the 1907 Meeting of the American Ophthalmological Society

At the time of my first examination of the case I found a remarkable ophthalmoscopic picture in the right eye, which was carefully and accurately sketched for me by Miss Margaretta Washington of Philadelphia. The left eyeground failed to exhibit anything abnormal except a slight thickening of the superficial layers of the retina in and around the macular region.

Dr. Rohrer informed me that the patient's father had had his eyes examined by Dr. Henry S. Schell, of Philadelphia, and that Dr. Schell had given him the following notes on the case: "O. S.: vitreous full of shreds; disc whitish, with remains of tissue proliferation at edges; eye becoming myopic. O. D.: disc also ill-defined; hypermetropia." . . . "Thinks there has been basilar meningitis." The man—who was a physician—"had had epileptic seizures for three or four years and was obliged to give up practice."

When first I saw the patient, she stated that twelve years before she saw me her father had consulted Dr. William F. Norris for his eyes, and that a diagnosis of tumor of the brain was made. The patient was ill for four years, dying at 35 years of age. One year before death Dr. Rohrer obtained similar findings. Both Dr. S. Weir Mitchell and Dr. William H. Hammond made an antemortem diagnosis of syphilitic brain tumor, which was proved at autopsy.

Her mother, who was 46 years of age, and had always seemed healthy, wore glasses for presbyopia. The patient had two sisters, one older and the other younger; both of them wore glasses for far-sightedness and astigmia. One brother, the youngest of the family, had never had any eye trouble. All of these cases had been examined by Dr. Rohrer, who did not find any specific stigmata.

The face, the skull and the teeth (Hutchinsonian in character) of the patient, though not pronounced, were characteristic of hereditary syphilis. Careful correction of the total error of refraction with scopolamin cycloplegia (O. D. + S. 2.25 D. $\overset{\frown}{-}$ + C. 0.37½ D. ax. 150°, and O. S. − S. 1.75 D. $\overset{\frown}{-}$ + C. 1 D. ax 30°) gave a vision of one-half of normal with the right eye, and of normal with the left. These lenses, constantly worn, promptly allowed binocular fusion and removed a medium grade of manifest exophoria and a slight left superior hyperphoria both for near and far, which had been previously corrected in a measure by a tilting of the head and a tiresome twist of the right eye.

One year ago, during my summer vacation, the patient wrote to me for re-examination of her refraction error; I have not heard from her since.

REMARKS.

The case is interesting both from its subjective and its objective standpoints.

SUBJECTIVE.

1. The non-disturbance of the central negative scotomata. This is probably due to their faintness and their relative inequalities in intensity; particularly when the best and the most comfortable binocular fusion could be obtained by throwing the least injured, slightly excentric part of the right retina into simultaneous fixation with the relatively uninjured macular region of the left eye.

2. The non-disturbing qualities of the two physiologic blind spots in spite of their necessarily marked increase in size.

OBJECTIVE.

3. The predominance of the main visible degeneration expressions in the lymph channel walls of the central retinal circulation.

4. The vast area over which the engorgements of the vascular channels of both series of the central retinal circulation extends.

5. The congeries, the false loops, and the curious twistings of the vascular currents in their dilated channels.

6. The characteristic tint of the venous obstruction columns and the remarkably excellent tinting of the arterial currents.

7. The great irregularities both of the arterial and the venous currents, particularly those of the former.

8. The ophthalmoscopic appearance of some of the fine and ordinarily invisible vascular stems—necessarily, with but little, if any, lymph channel wall thickening or opacity.

9. The solitary coarse degeneration area of the retinal fibers—appearing on and in the nasal half of the optic disc and along the nasal borders of the disc, and extending inwards between the main nasal stems of the central retinal vessels.

10. The superficiality of the fresh hemorrhagic extravasations both from the smaller arteries and the finer veins in proximity to the pigment deposits of older hemorrhages. And

11. The remarkable preservation of the intervening retinal elements, together with the apparent non-involvement of the underlying glandular functioning structures and material, and the further removed chorioidal membrane.

A most careful search throughout ophthalmic literature, with a close study both of the graphic and the written descriptions of similar affections—particularly among the many English, French, and German ones—for several years past, has failed to reveal anything which can be considered as parallel throughout with this case. Similar in one or more details, and dissimilar in many others; alike as to superficial extent and unlike as to deep involvement; agreeing as to probable cause, and yet not corresponding in ultimate effect, and existing as an isolated ocular stigma in a proved syphilitic's apparently otherwise healthy family—the case, therefore, assumes an importance which is worthy of record.

The only prototype of this case—and one which is more grossly binocular in character—that has been brought to my personal knowledge is that of an unpublished one studied through the kindness of Joseph Schoebl, of Prague, Austria, who gave me not only a water-color sketch of the same, but presented me with a microscopic slide of an actual specimen of the conditions. Like mine, the subject was a young girl, in whom the condition had probably arisen just before puberty, and, like mine, she was the one affected daughter of a male nerve-syphilitic. My explanation of this (his) single section, evidences anatomically the very points brought out in my study of the present case with the lower magnification of the ophthalmoscope, and proves the correctness of the above ophthalmoscopic statements.

MAGNETIC AND NON-MAGNETIC PROPERTIES OF IRON ALLOYS.

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During the past few years the increasing industrial use of the alloys of steel has resulted in marked changes and improvements in the quality of steel manufactured. The effect of these various alloys, as well as the percentage of carbon and whether annealed or unannealed, on the physical condition of steel, particularly its magnetic property, is of considerable importance to the ophthalmologist, especially those in the vicinity of large iron and steel industrial centers, on account of the possibility of injury from splinters of these newer steels as they are being used more every day in the construction of improved machinery and tools.

Although familiar in a general way, through a knowledge of metallurgy, with the magnetic properties of the different alloys of iron, my immediate attention to the importance of the subject was directed by the following case:

G. C., aged 21, consulted me on Nov. 24, 1905, with an injury

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* Read before the American Academy of Ophthalmology and Oto-Laryngology, Louisville, Ky., Sept. 27, 1907.

of the right eye received while working on a dynamo bed-plate. The wound was a large one, ten millimeters long, and extended from the nasal side of the sclera into three millimeters of the cornea. The lens was ruptured, so that a view of the fundus could not be obtained. Under general anesthesia, attempts to extract the metal by the giant magnet failed. With such an extensive lesion, and believing that either the metal had gone through the eye or was embedded in the eye opposite the wound, enucleation was done. The globe was intact and the metal found in the bottom of the vitreous chamber. As I was at a loss to account for the negative reaction from so large a piece of metal, measuring 7 by 4 millimeters, and weighing $2\frac{1}{4}$ grams, I placed the fragment in the magnetic field, and, to my surprise, it was not attracted by the magnet. Upon inquiry, I was told that the bed-plate in question contained a high percentage of manganese.

The subject, which is of importance both from an ophthalmological as well as a scientific standpoint, will be considered under two headings: (1) Those alloys of iron which are non-magnetic or nearly so even in strong magnetic fields; (2) those alloys of iron which are more magnetic than the purest commercial iron, within a certain range of the magnetic field.

ALLOYS OF IRON WHOLLY OR NEARLY NON-MAGNETIC.

Manganese.—The alloying of iron with varying percentages of manganese and the effect it produces in the destruction and alteration of its susceptibility to magnetism is interesting and surprising. When manganese in an alloy of iron reaches 13 per cent., its magnetic character is destroyed, and steel thus produced is as inert to magnetism as zinc or stone. The effect of composite alloys of iron is even more striking. Nickel steel in itself is extremely magnetic; even an alloy containing 15 or 25 per cent. of nickel is fairly magnetic, but add 5 per cent. of manganese to any of these high percentage nickel steels and they become non-magnetic, although a 5 per cent. manganese steel is fairly magnetic, but of no commercial use, as steel containing 2.5 to 7 per cent. of manganese is brittle and comparatively worthless, but when the amount exceeds 7 per cent., great strength and toughness are obtained. Small quantities, 0.4 to 0.5 per cent. of manganese, are highly beneficial to steel and the very best steel contains a little. An 8 per cent. manganese steel has considerable intensity of magnetization, but add $2\frac{1}{2}$ per cent. of nickel and it becomes non-magnetic, although a $2\frac{1}{2}$ per cent. nickel steel is almost as magnetic in low fields as pure iron. This phenomenon is produced with other metals alloyed with manganese steel. A curious fact is observed when copper or chromium is added to an almost non-magnetic nickel-manganese steel. The composite alloy increases the magnetic perceptibility probably on account of the softening effect produced by the added metal. Another important point in the magnetization of iron alloys must not be lost sight of, and that is a body which in the annealed state is feebly magnetic in a certain magnetic field becomes non-magnetic in the same field when unannealed. As magnetization involves a molecular change in magnetic bodies, whatever affects the state of molecular aggregation in these bodies affects the magnetic susceptibility. An increase or decrease of mechanical hardness means an increase or decrease of the power of resisting molecular change, and hence magnetic hardness or magnetic softness corresponds to mechanical hardness or softness of iron and its alloys. It is thus easy to understand the conversion of a magnetic into a non-magnetic body by alloying the former with certain metals which increase the mechanical hardness of the alloy.

Excess of carbon in high manganese steels softens them and increases their magnetic susceptibility, so that high carbon steels having a percentage of from 13 to 15 per cent. manganese are slightly magnetic in powerful fields. With low carbon and the same percentage of manganese the steel is practically non-magnetic.

The great commercial and practical importance of manganese steel, on account of its hardness and toughness, is seen in its application in the construction of machinery and tools, as in rock-crushers, railroad crossings, frogs, car-wheels, safes and, on account of its low magnetic susceptibility, in bed-plates of dynamos.

ALLOYS OF IRON MORE MAGNETIC THAN PURE IRON.

The magnetic susceptibility of the best and purest commercial iron is increased in low fields by the addition of nickel, silicon and aluminum.

Nickel.—Owing to its cheapeness, nickel-steel is more extensively used than any of the other hardening alloys. When nickel does not exceed 3 per cent. the alloy is nearly as good magnetically as very soft iron, and when the magnetic field is very low the permeability of a 30 per cent. nickel-iron alloy exceeds the best and softest iron.

In armor-plate, axles, railroad forgings and rails, the percentage of nickel averages 3 to 3.5 per cent. In marine and locomotive boiler tubes, the percentage of nickel varies from 25 to 30 per cent.

Chromium.—Chromium has a much less powerful effect in destroying the magnetic properties of iron than manganese, for iron containing 65 per cent. of chromium is still attracted by a magnet. It is used either alone or with nickel or tungsten in burglar-proof safes, tools and armor-piercing projectiles. Commercial steel contains 3 to 5 per cent. of chromium.

Tungsten.—Tungsten united with copper produces some valuable alloys. Steel containing tungsten is highly valuable for cutting tools. Tungsten steel possesses remarkable magnetic properties, as used commercially in percentages of from 3 to 10 per cent.

Two and a half per cent. of *silicon* or *aluminum* alloyed with iron increases the magnetic permeability so that the magnetism is better than the purest Swedish charcoal iron. When aluminum in ferro-alloys exceeds 17 per cent., the alloy becomes non-magnetic.

The fact that special steels differ widely in their behavior when placed in a magnetic field ought to be borne in mind, although all of them bear only slightly or indirectly on the question of the possibility of removal from the eye.

GLAUCOMA AFTER CATARACT EXTRACTION WITH IRIDECTOMY.*

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Secondary glaucoma following cataract extraction with iridectomy is fortunately not very common. Its occurrence is generally said to be due to changes which obstruct the escape of fluid at the filtration angle. It is seldom possible to discover in the living eye what these changes are, but a microscopic examination of the excised eye usually shows some interference with the patency of the filtration angle. This obstruction may be due to some entanglement of the iris or capsule in the scar, or some obstruction of the pupil by membrane or inflammatory exudation. It is supposed to be more commonly due to adhesions of the pillars of the iris coloboma to the cicatrix and the lens capsule.

Treacher Collins[1] reports that in ten eyes blinded by glaucoma following cataract extraction, and microscopically examined, the filtration angle was closed in the neighborhood of the scar in every case. In one of the ten eyes the capsule was adherent to the scar, and in the tenth, from which the lens had been removed in its capsule, the hyaloid was adherent in like manner. In one case, in which a large iridectomy had been made and the anterior capsule partly removed with capsule forceps, the filtration angle was found blocked by an organized blood clot and inflammatory exudation and lens matter.

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* Read before the American Academy of Ophthalmology and Otolaryngology, at Louisville, Ky., Sept. 26, 1907.

[1] Trans. Ophthal. Soc. United Kingdom, 1890.

Priestley Smith[2] says that when an eye which presents no complication, such as entanglement of iris or capsule, which leads to traction on the ciliary processes, and which has enjoyed good sight for months after the operation and then becomes glaucomatous, we may reasonably conjecture that a transparent membrane, which at first gave no trouble, has lately contracted, or that it has become less permeable than before, and has been pushed forward by an accumulation of fluid in the vitreous chamber. He further states that the accumulation of fluid behind the lens in some cases seems to be due to obstruction of the circumlental space by swollen ciliary processes, and that changes in the hyaloid membrane, in the vitreous tissue, or in the fluid itself, are possible impediments to filtration, and in eyes blinded by glaucoma we often find the hyaloid and the septa of the vitreous thickened or coated by albuminous coagula.

The occurrence of glaucoma in an eye in which a broad peripheral iridectomy has been made, and in which there is no entanglement of capsule or pillars of the iris coloboma, would seem to support the theory of Bartels,[3] that the probable cause of glaucoma lies in a disturbed anterior ciliary venous circulation, and that it can occur in the absence of obstruction in the filtration angle. The following two cases have a bearing on this point:

Mr. B., aged 65, in good general physical condition, was operated for mature senile cataract May 13, 1905, a large peripheral iridectomy being performed at the time of the extraction. Recovery was uneventful, and six weeks after the operation there was a clear pupillary space, no evidence of iritic adhesion or entanglement of iris or capsule in the wound, and with correcting lenses the vision was 20/30. Four weeks later, during a severe attack of intestinal inflammation, he was attacked with glaucomatous inflammation, which terminated in complete loss of sight. Three months later the hardened eyeball was removed. On examination microscopically the operation cicatrix was found entirely free of iris or capsule entanglements and the filtration angle unobstructed. The ciliary processes were turgid and the chorioidal veins distended. It is thought that the inflamed ciliary processes poured into the aqueous chamber a serous fluid which escaped from the eye with greater difficulty than the normal secretion and clogged the filtration angle, thus producing the glaucomatous condition.

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[2] Norris and Oliver's "System of Diseases of the Eye," 1898.

[3] Quoted from Tenny, "The Relation of the Circumlental Space to the Causation of Glaucoma," Trans. Sec. on Ophthal., A. M. A., 1907.

In the second case the conditions were quite similar. Mrs. C., aged 67, was operated for uncomplicated mature senile cataract Jan. 24, 1906, a large peripheral iridectomy being performed at the time of extraction. Recovery was uneventful, and four weeks later, without apparent cause, the patient suffered from severe pain and great impairment of vision. She was not seen until a week later, when the intraocular tension was found decidedly increased, the aqueous cloudy, but the anterior chamber only slightly shallowed. Vision had been reduced to light perception. Posterior sclerotomy was performed, as also paracentesis of the cornea, but with only temporary relief, and a few weeks later the hardened eyeball was excised. By microscopical examination no narrowing of the filtration angle could be discovered, though there was evidence of serous cyclitis which, by altering the constitution of the fluid in the anterior chamber, probably produced clogging of the drainage at the filtration angle. No entanglement of capsule or pillars of the iris coloboma in the wound could be detected.

These cases indicate that a broad peripheral iridectomy which frees the filtration angle is not always a preventive of glaucoma, even though iridectomy is recognized as one of the proper procedures to adopt in endeavors to cure the disease. They further indicate that a shallow anterior chamber and narrowing or closure of the filtration angle are not necessary for the production of glaucoma, but that alteration in the character of the intraocular fluids may interfere with the proper drainage from the eye, resulting in a retention of fluid and increased tension. Quoting from Priestley Smith.[4] "The evidence is complete that retention is the essential factor in the morbid process."

It follows, then, that secondary glaucoma following cataract extraction with iridectomy is not absolutely avoidable by any particular method of operating, though glaucoma is less likely to occur following a clean peripheral iridectomy in cataract extraction that heals without incarceration of capsule or iris in the wound, or morbid changes which narrow or close the filtration angle.

Glaucoma following discission for secondary cataract is not infrequent and is due to not only the pressure upon the filtration angle, resulting from the swollen ciliary processes, produced by traction, but also to the altered character of the fluids of the eye, caused by the exudates thrown out by the inflamed ciliary region.

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[4] Erasmus Wilson Lectures on the Pathology and Treatment of Glaucoma, 1891.

The treatment, as in any other morbid condition, resolves itself into attempts to remove the causes. The exciting causes are the various conditions which disturb the circulation and congest the ocular venous system. Aside from the effects of trauma accompanying the operative procedures, we may have exposure to cold, depressing emotions, marked nutritional disturbances, or general debility of any character as causative factors. Warmth, rest, elimination and tonics are, therefore, essentials in proper treatment. In my judgment, a rheumatic tendency is one of the most active predisposing influences, and accordingly the administration of sodium salicylate in fairly large doses will prove beneficial, especially when given in connection with calomel purgation. Pilocarpin by hypodermic injection will also be found beneficial in those cases where the drug is well borne. Pilocarpin locally is indicated in those cases where there is a tendency to blocking of the filtration angle mechanically by folds of iris.

As surgical treatment the procedures to be adopted should depend upon the conditions presented. With glaucomatous symptoms in an eye with reasonably deep anterior chamber and no determinable evidence of blocking of the filtration angle by iritic or capsular adhesions, or inflammatory exudate, thus pointing to an alteration in the constitution of the fluid rather than a mechanical obstruction of the opening in the filtration angle, paracentesis of the cornea, repeated if necessary, will usually prove sufficient when carried out in connection with the other general treatment indicated. If the anterior chamber is shallow and there are other evidences of narrowing or closure of the filtration angle, an anterior sclerotomy is preferable, and with a view to still further lessening the intraocular tension this may be supplemented by a posterior sclerotomy. If the anterior sclerotomy wound can be kept open, under as nearly aseptic conditions as possible, or reopened in the event the intraocular tension remains high, while the patient is at the same time receiving appropriate treatment for the disturbed ocular circulation, the ultimate results will be more favorable.

This latter point was impressed upon me by a unique case operated for senile cataract some ten or twelve years ago. The patient, a distinctly rheumatic person, apparently made an uneventful recovery from an extraction with iridectomy until the tenth day, when he had a sharp attack of articular rheumatism accompanied by increased intraocular tension, shallowing and clouding of the anterior chamber, ciliary injection, and pain in and about the eye. Soon after the onset of this attack the patient by accident struck the eye with sufficient force to partially rupture the wound and permit escape of aqueous. There was almost immediate relief from pain, and in a few days the glaucomatous symptoms had practically disappeared, but the fistulous opening at the limbus did not close entirely for several weeks, and only then under the effects of stimulation, which produced a permeable cystoid scar, one of the surest and safest preventives of secondary glaucoma following cataract extraction. It is thought that the patient had an attack of cyclitis with the exudation of serous fluid of such consistency that it did not drain well through the filtration angle, producing glaucomatous symptoms from which he was relieved by large doses of sodium salicylate coupled with the traumatic re-establishment of drainage. Good vision with the correcting lenses was retained for a period of three years, or until his death.

Priestley Smith,[5] referring to primary glaucoma, says that a certain group of cases depend on disease of the blood or blood vessels, causing an excess of fluid in the vitreous chamber, and that the swollen ciliary processes prevent exit of this fluid. He further says that exudations into either the aqueous or vitreous chambers are sometimes followed by high tension, and whether a cause or a consequence of the glaucomatous complication it aggravates and perpetuates the difficulty of filtration.

There is reason for believing that alteration in the constitution of the intraocular fluids may occur in secondary or any other form of glaucoma, and that failure in drainage is as often due to the altered character of the fluids of the eye as to mechanical obstruction, and that this alteration, in any form of glaucoma, depends primarily on some vascular disturbance which congests the uveal tract.

I am a firm believer in the retention theory as to the cause of glaucoma, and have not been able to convince myself that a mere obstruction of the filtration angle at one point in the filtration zone, as occurs when a tag of iris or capsule is incarcerated in the wound, can in itself account for the increased intraocular pressure. Every operator of experience has seen numerous cases of incarcerated iris or capsule which did not produce glaucoma, and there is no logical reason for believing that such a condition, from mechanical obstruction of a portion of the filtration angle only, can alone produce glaucoma. If it is a factor in the production of glaucoma it is more reasonable to assume that it excites an inflammatory change in the uveal tract which results in a constituent change in the fluids of the eye, impeding proper filtration.

Evidence seems to show that glaucoma results from excessive pressure in the vitreous chamber, caused, as pointed out by Tenny,[6] by diseased blood vessels in the uveal tract. At the same time there is probably an alteration in the constitution of the aqueous humor, which blocks up the outlets. This being true, our treatment should not only be surgical to relieve the eyeball of intraocular pressure and do away with purely mechanical obstruction to free drainage, but constitutional also for the purpose of favorably altering the character of the fluids of the eye. This treatment will essentially be that treatment which relieves congestion and gives appropriate attention to recognized constitutional dyscrasias.

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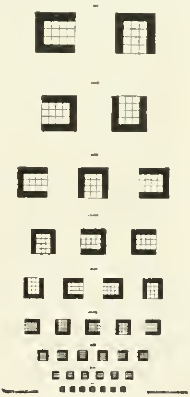
[5] Norris and Oliver's "System of Diseases of the Eye," 1898.

TEST CARD FOR THE ILLITERATE.

Charles A. Oliver, A.M., M.D.
PHILADELPHIA, U. S. A.

(Illustrated.)

The test card shown in the accompanying illustration has been selected because the well-known form of object used has been proved to be the most easily comprehended and the most universally understood of all that have been tried.



This series is supplemental to the test types which were designed by the writer some fifteen years ago, and which have been in constant and satisfactory use since.

The advantages possessed by this and the former series of tests are:

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[6] Trans. Sec. on Ophthal. A. M. A., 1907.

1. Each test object has its component parts and interspaces included absolutely within the one-minute angle limit of vision or more, thus avoiding all effort to decipher complicated forms and preventing any visual confusion which might be produced by intricate characterization.

2. Each test object is placed in the center of an area which is either equal to or greater than the size of the object itself. This has been done so that the test objects can not interfere with one another, thus preventing, just as was obviated, any confusion by too close an approximation of the entire groups.

3. Each line of test object is of a size that should be seen at five meters' distance or even fractional multiples thereof, thus avoiding useless calculation as to relative values.

In the preparation of this card, as in the previous three-edition letter series, the finest plate work has been procured, the proper color of ink has been used, and the correct printing of the objects themselves has been made. The choice of the material used in the construction of the card, the regulation of its size, and the selection of its tint, have been carefully studied.

The tests are made in the ordinary way by having the subjects state, either verbally or by motion, which side of the object is open.

Messrs. Wall & Ochs, of Philadelphia, have the card in stock.

Reports of Societies.

THE AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

Meeting, held at Louisville, Ky., Sept. 26, 27 and 28, 1907.

An address of welcome by the mayor of Louisville was responded to by Dr. Dudley Reynolds.

A symposium on "Intracranial Complications of Otitic Origin," by Dr. J. A. Stucky, President; "Pyogenic Diseases of the Brain of Otitic Origin," by Dr. James F. McKernon, of New York City, the guest of honor of the Academy, and "Ocular Symptoms Following Intracranial Complications of Otitic Disease," by Dr. Percy Friedenberg, of New York, filled the first session, after which the Academy divided for section work.

Ocular Symptoms following Intracranial Complications of Otitic Disease.

A paper by Dr. Percy Friedenberg, of New York City, was a report based on the study of the records of the New York Eye and Ear Infirmary from 1905 to 1907, which included about a hundred cases of intracranial complications of otitic disease. He said that in this country most ophthalmologists were also aural surgeons, and it is due in large measure to the work of Kipp, Gruening, Knapp, Roosa, Alt and other Americans that the teachings of Bezold, Zaufal, Lucae, Troeltsch and Schwartze have been spread in this country. Kipp was the first to call attention to the importance of an ophthalmoscopic examination in cases of ear disease. The importance of otologists being skilled in ophthalmoscopy was urged. In 12 fatal cases of sinus thrombosis fundus changes had been noted. The author would modify the conclusion of Koerner, that unilateral occlusion of the venous channels in lateral sinus and jugular does not seem sufficient in most cases to cause congestion of the ocular fundus. In addition to fundus changes observed, the speaker called attention to other ocular symptoms. In a large number of cases of uncomplicated otitis or mastoiditis, edema of the eyelids, limited to the side affected, was an expression of involvement of the zygoma cells. Ophthalmoplegia had occurred in two cases of brain abscess. Convergent strabismus was noted in meningitis. Abducens paralysis occurred in one case of middle-ear suppuration. Conjugate deviation of the eyes as well as nystagmus was found in several cases of brain abscess and meningitis; also in sinus thrombosis.

This was read as part of symposium and not discussed.

Dr. Giles G. Savage, of Nashville, was appointed by the President to preside over the Ophthalmologic Section.

An Inquiry into the Refractive and Pathologic Conditions of Old Soldiers, with Reference to the Frequency and Kinds of Diseases to which they are Subject, with Special Reference to the Relation of these to Cataract.

D. W. Green, of Dayton, Ohio, submitted a statistical report on ocular conditions found in an examination, under homatropin, of over 500 inmates of the National Soldiers' Home at Dayton, Ohio, of which Dr. Green is a medical officer. The men being over 60 years of age, with a personal history of each case, covering occupation, habits, specific disease, facial measurements, refraction, pathologic findings and blood pressure, with a possible relation of these to the 70 per cent. of cases with some degree of lens opacity, which seems consistent with the theory of Becker-Deutschmann that cataractous processes begin in the nucleus when the lens ceases to grow and spread by fissuring and segmentation of the cortex; in more than 60 per cent. this is first detected in the cortex, and always in the lower half of the periphery, the effects of gravity probably having something to do with this. The cases were not selected and it is not assumed that the statistics prove anything, but they are offered by the author with the hope that the value of the comparisons, analogies, averages and conclusions will be of interest in showing the conditions under which cataract most frequently develops in this class of men, who, as a rule, came from the middle and lower working classes, whose average physical condition is not usually good. Chorioidal disease has the largest percentage of frequency, shown by the fine vitreous opacities, inflammatory and senile changes on the temporal side or surrounding the disc and often extending toward or into the macular region. About 75 per cent. have shown these chorioidal changes. About 75 per cent. have some error of refraction, hypermetropia being most frequent, myopia and astigmatism rare.

Interesting blood pressure tests were made with the Janeway instruments between 2 and 5 o'clock in the afternoon, when it was believed the light midday meal had passed out of the stomach. In 455 records there is an average systolic pressure of 163.6. Continued high pressure can never exist without hypertrophy of the heart, which when once established is constant and only fails when dilatation and broken compensation is reached. The author found a pressure of 130 M Hg as a standard in harmony with the physical condition and feel of the pulse of these men, as an upper normal limit. The purpose of the statistics with reference to the blood pressure records is to show the relation or association, if any, of arterial sclerosis and hypertension to the intra-ocular conditions of a large proportion of these men. The blood supply of the eye is comparatively limited. Obviously any disease which narrows the caliber of these vessels and reduces the elasticity of their walls will affect the circulation of the blood through them and the nutrition of the structures they supply, degenerative changes resulting. All the changes in the lens which take place in cataract are essentially degenerative. Secondary changes occur as the result of inflammation in the surrounding tissues. Of these 455 men whose systolic blood pressure was taken, only 3.7 per cent. had normal blood pressure.

Dust-like opacities were looked for in all cases of specific history, but not found in more than 2 per cent. The statistics seemed to show that the influence of alcoholic drinks in the causation of arterial disease has probably been overestimated, and that as an etiological factor it does not compare with tobacco when used in excess.

DISCUSSION.

Dr. Jackson, of Denver, said that the statistics bear out what has been maintained by others, that there is a general increase in blood pressure with age. He thought the limits of normal taken by the essayist in regard to blood pressure were too low for men of 60 years of age and over, and that it should be regarded as 140 or 150. An interesting fact in the statistics was that those who had been subjected to hard labor seemed to have a higher pressure than clerks and professional men. In some cases of incipient cataract and even in mature cataract, the blood pressure was not high, considering the age of the patient. The speaker thought that cataract was not so much connected with vascular disease as with poisoning of the lens substance—some sort of autointoxication.

Dr. Robert S. Lamb, of Washington, said the value of these statistics would be brought out later when the author had followed the patients for several years and correlated the facts and accumulated information. The conclusions of Dr. Jackson were in accord with those of this speaker in studying cases of arteriosclerosis. Cataract, he said, was more often associated with lessened tension than increased tension, although he had seen cases of cataract with arteriosclerosis. These conditions, however, were not dependent on each other. There are other cases of poisoning of the system through faulty metabolism, and, as suggested by the previous speaker, the same thing that caused the arteriosclerosis would cause the cataract regardless of the arteriosclerosis.

Dr. A. E. Baker, of Cleveland, said he had conceived the idea some years ago that there might be some connection between increased blood pressure and glaucoma, but he has not been able to draw any conclusions from the blood pressure examinations he has made in such cases, although he attributed some of his contradictory results to the character of the instrument he had been using, with a narrow band to go around the arm.

Dr. J. E. Brown, of Columbus, said the statistics would be of great value when, through a series of examinations, one could compare lens changes with the pathological conditions and conditions of blood pressure.

Dr. Percy Friedenberg, of New York, said it would be interesting to learn whether the pathological rise in blood pressure in animals was accompanied by similar intra-ocular pressure. It is generally conceded that ophthalmoscopic evidence of arteriosclerosis is diagnostic.

Dr. H. B. Young, of Burlington, Iowa, said that if there is a manifest deviation from the average blood pressure it is of pathological significance. This pressure, of course, increases with age, but when above 160 or below 110 it has pathological significance. While it had nothing to do with the production of cataract, he thought the presence of high pressure with cataract was a danger symptom wherein postoperative difficulties might be expected and should be borne in mind.

Dr. L. Connor, of Detroit, said that the observations made were of great value, but it could have been wished that, in this connection, observations had been made of the urine conditions and the alvine evacuations, particularly as regards the lower bowel—in other words, the condition of metabolism as associated with this blood pressure. He did not think the direct connection between high blood pressure and cataract could be very great and he would expect more from indirect influence, such as toxins which have so large a part in the life of the old person, which, if perfectly understood, might enable one to eliminate some of them and perhaps prevent the maturation of cataract.

Dr. George F. Suker, of Chicago, said that it should be borne in mind that arteriosclerosis did not necessarily mean a generally disseminated process. It might exist in the peripheral vessels and the larger arteries escape. Arteriosclerosis is a connective tissue process of the tunica media, and he objects to the term being used in a general way, the term "angiosclerosis" being better, as the cataractous conditions are connected with the veins as well as the arteries. Dr. Suker recommended the administration of potassium iodid in .5 gr. doses ten or twelve times a day for patients with arteriosclerosis and incipient cataract, as it would often delay the development.

Dr. Ringueberg, of Lockport, N. Y., said it had been his routine practice for ten years to administer potassium iodid in cases of cataract, often with markedly favorable results.

Dr. Green, closing the discussion, said he had no knowledge as to the rôle age plays in these conditions of arteriosclerosis with eye symptoms. The statistics show some men at 75 with a low tension, while others have 110. It is probable that they are in the stage of dilatation and broken compensation and the blood pressure has followed because of the physical inability of the heart to maintain. His impression is that there is a strong tendency as men grow older for the tension to rise.

Glioma Retinæ, with report of Binocular Case Cured.

Dr. Charles Lukens, of Toledo, Ohio, recited a case of this condition in a male child of 9 months of age, the attention of the parents having been attracted to the condition in its early stage on account of the child of a brother having died from this condition. This well-nourished child seemed perfectly healthy, and there were no symptoms of pain or discomfort. The left eye at times diverged and manifested a slight nystagmus on attempting to fix. The cornea was clear and the pupil normal in size. The crystalline lens was clear and back of the lens was a bright yellow reflex across which blood vessels were seen. The tension was normal. The right eye was apparently normal. The left eye was enucleated and the vitreous chamber found half filled with a whitish mass which on microscopic examination was found to be true glioma. The optic nerve was not involved and the growth was intra-ocular. Two and a half years later the vision in the right eye was noticed to be affected and examination revealed a light yellow reflex in and down, back of the pupil, the growth encroaching on the visual line from the sides. Tension normal. Operation was advised, but refused, while sight remained. Six weeks later enucleation was performed and the child noticeably increased in vigor, and very recently (16 months after operation) was reported to be very well with no symptoms of brain involvement. The tumor in this last eye filled half the vitreous space, glioma encroaching from all sides and filling nearly the entire retina, springing from both granular layers. Nerve infiltrated in scleral opening. Glioma is a rare disease and was thought by early observers to be incurable. It is limited to childhood. Microscopically the neoplasm closely resembles round cell sarcoma and is so classified by many general surgeons. All unmolested cases die, and many die in spite of operation. The neoplasm spreads both by contiguity and metastasis. The prognosis may be considered good if the operation is performed within ten weeks from the appearance of the whitish reflex, and before the growth has extended beyond the eyeball, which latter is impossible to determine before enucleation. The optic nerve should be cut as near as possible to the apex of the orbit. If the second eye becomes involved it should likewise be removed. In doubtful diagnosis, operation is usually conservative surgery. Recent observations indicate that glioma retinæ is curable in 90 to 95 per cent. of cases if promptly dealt with.

DISCUSSION.

Dr. Friedenberg, of New York, suggested that the title of the paper was misleading, as it suggested that the eyes were saved, whereas they were lost. The glioma retinæ was not cured, although the life had been saved.

Dr. Adolph Alt, of St. Louis, said he had operated on two cases, one ten years ago and the other four years ago, in which the optic nerve had been invaded by the growth for a little distance, and no recurrence has occurred.

Dr. A. Timberman, of Columbus, congratulated the author on having had the confidence of the parents sufficiently to take out both eyes of a little child. He thought all those who are teachers or who have seen the frightful course of this disease should impress upon the young in the classes in the colleges the importance of removing the eye early, as there is nothing so hard to bear, both for the patient and the parent caring for it, as a full-fledged glioma.

Dr. J. E. Minney, of Topeka, said he had two cases, one of nine years' standing and the other of thirteen years' standing, where the children are well. In the former case it did not appear in the second eye, although it had in the latter case. If these are benign sarcoma as described by certain authors, why do they appear in other parts of the body and the patients die from them?

Dr. Savage, of Nashville, said he did not think it should be a difficult matter to have parents assent to a second operation should this growth appear in the other eye, when they know death is the only other alternative.

Dr. Alt said he had recently had the experience where enucleation of the second eye was refused, the parents preferring the child should die.

Dr. Lukens, closing the discussion, thought he should not be criticized for using the word "cured" because he had taken the organ out. Glioma is not a sarcoma and the history is that they do not recur after eight or ten years, but in a year and a half usually, or at most in four or five years.

Dilator Pupillæ.

Dr. Adolph Alt, of St. Louis, reviews the literature on the subject, in which there is a wide divergence of opinion, many recent authors not hesitating to declare that the limiting membrane is undoubtedly the dilator pupillæ. However, the descriptions which they give of the conditions as they appear to them are so different in materially essential points that it looks as if, paradoxical as it may seem, a better opportunity to see has actually increased the difficulties and made things worse confounded. The author had been interested in this question from his student days, but like others had been unable to convince himself of a muscular layer in the iris which might be looked upon as the ardently sought for dilator pupillæ. The only tissue which reminded one of a muscular coat was a layer of apparent spindle cells with more or less rod-shaped nuclei which could be seen on the posterior iris surface when the pigment epithelium was gently scraped off. However, with the pigment then in use there was no reaction proving them to be of a muscular nature, nor was their shape as slender as that of unstriped muscular cells elsewhere in the body. With present methods of bleaching (after T. Collins' and later with Alfieri's method) some sections show in meridional sections the posterior surface of the iris covered with epithelium, which forms two layers at the iris periphery where it joins the two epithelial layers of the ciliary body and at the pupilliary margin behind the sphincter pupillæ. In the intermediate part there are marked differences in specimens from the same and from different eyes. There is usually one layer, but in some two layers of epithelial cells are found. In front of these pigment epithelial cells lies a continuous row of spindle cells with a mostly rod-shaped nucleus. Sections made on the flat seem to make it certain that there is but one layer of such rod-shaped nuclei. The outline of the single cells to which these belong the speaker had not been able to determine, yet not infrequently a separation of the layers takes place by pressure on the cover glass, and then long slender spindle cells with a rod-shaped nucleus become here and there isolated and visible. Where there are two layers of pigment cells he had found their oval or round nuclei as well as the rod-shaped ones of the layer in front of them. In front of the rod-shaped nuclei, when the posterior layers have been split off, a small amount of amorphous or slightly granular substance is occasionally seen which takes on a little deeper tint. In this also are found invariably some rod-shaped nuclei. It is evidently a part of their layer adhering to the iris tissue proper. The layer of rod-shaped nuclei is closely applied to the anterior pigment epithelium layer except at the iris periphery, where it reaches further outward than the latter and is separated from it by some intervening connective tissue.

Taking all things into consideration, it is probably proper to affirm that this single layer of slender spindle cells with a rod-shaped nucleus forms the muscular dilator pupillæ. The peculiar part is the close union of the cells with each other, so that their outlines are invisible and the individual cells can not, as a rule, be recognized. At the pupillary edge the dilator joins the posterior surface of the sphincter muscle. At the periphery of the iris fibers starting from the dilator spread fan-like out and backwards into the connective tissue of the ciliary body, or form a more or less sharply defined band which, passing in front of the circulus iridis major, is lost in the inner layers of the ligamentum pectinatum. If it be granted that the dilator pupillæ has, therefore, been seen and described, it is a rather weak muscle compared to the sphincter pupillæ. It seems probable that its action is enhanced by the contraction of the iris arteries and perhaps by the relaxation of the sphincter muscle whenever a dilation of the pupil takes place.

Dr. Alt illustrated his paper with lantern slides.

DISCUSSION.

Dr. Dudley Reynolds, of Louisville, said his understanding is that all muscular fiber must have an investing sheath. He had not been able to satisfy himself that any muscular characteristics dwell in these spindle-shaped bodies in the iris substance, and it seemed to him there was a want of distinct and definite differentiation between the pigmented part of the iris and these so-called muscular fibers.

Dr. Friedenberg said that the histological demonstration by Dr. Alt is corroborated by the experimental investigation by Nelson, of New York, who finds in cases of paralysis of the sympathetic there is a leak in the ennervation of the stimulating branch of the dilator, so that the instillation of cocain acting, as it normally does, on the nerve, fails to have any effect on the pupil. There is an inhibiting branch to the dilator, and if this be paralyzed the dilator is free to respond to stimulation of drugs that ordinarily do not affect it. Where there is paralysis of both branches, adrenalin will produce muscular dilatation. It should be borne in mind in enucleation for glaucoma that we should go posterior to the inhibiting fibers. The experiments were done on rabbits and the clinical observations made on human beings.

Glaucoma after Cataract Extraction.

By Albert E. Bulson, Jr., of Fort Wayne. Secondary glaucoma following cataract extraction with iridectomy is not very common and its occurrence is generally said to be due to changes which obstruct the escape of a fluid at the filtration angle. Microscopic examination of the excised eye usually shows some interference with the patency of the filtration angle, which may be due to some entanglement of the iris or capsule in the scar or some obstruction of the pupil by membrane or inflammatory exudation. Glaucoma following discission for secondary cataract is not infrequent, and is due not only to pressure upon the filtration angle resulting from the swollen ciliary process produced by traction, but also by the altered character of the fluids of the eye caused by the exudates thrown out by the implanted ciliary region. The occurrence of glaucoma in an eye in which the broad peripheral iridectomy has been made and in which there is no entanglement of capsule or pillars of the iris coloboma would seem to support the theory of Bartels that the probable cause of glaucoma lies in a disturbed anterior ciliary venous circulation and that it can occur in the absence of obstruction in the filtration angle. The author cited two cases supporting this theory which indicated that a broad peripheral iridectomy which frees the filtration angle is not always a preventive of glaucoma. They further indicate that a shallow anterior chamber and narrowing or closure of the filtration angle are not necessary for the production of glaucoma, but that alteration in the character of the intra-ocular fluids may interfere with the proper drainage of the eye, resulting in retention of fluid and increased tension. However, glaucoma is less likely to occur following a clean iridectomy in cataract extraction that heals without incarceration of capsule or iris in the wound or morbid changes which close or narrow the filtration angle. The treatment naturally resolves itself into attempts to remove the causes, which may include exposure to cold, depressing emotions, marked nutritional disturbances or general debility of any character. Warmth, rest, elimination, are essential factors in treatment. Rheumatic tendency being an active predisposing influence, sodium salicylate in fair doses will prove beneficial, especially when given in connection with calomel purgation. Pilocarpin is also beneficial in cases where this drug is well borne. Pilocarpin is also of benefit locally where there is tendency to blocking of the filtration angle by folds of iris. The surgical treatment should be adapted to the conditions present; paracentesis of the cornea, an anterior sclerotomy, supplemented by posterior sclerotomy, are mentioned, covering suitable conditions. The speaker said he was a firm believer in the retention theory and did not believe that the mere obstruction of the filtration angle at one point can in itself account for the increased pressure. There is reason for believing that failure in drainage is as often due to the altered character of the fluids of the eye as to the mechanical obstruction, and this alteration in any form of glaucoma depends primarily on some vascular disturbance which congests the uveal tract.

DISCUSSION.

Dr. Jackson, of Denver, spoke of minute particles which, after discission of the lens, tend to accumulate in the tissue and clog the spaces. Glaucoma has been produced secondarily by metallic oxids accumulated in that space. He said a rational procedure was to leave a fistulous scar. In making a sclerotomy or incision after iridectomy he uses a very narrow knife, and after it has entered the sclera he turns it forward and makes a cut partially through from the inside, then goes back and gets the lens, leaving a triangular piece of tissue almost cut off except at the ends of the edge towards the cornea. The resulting scar is permeable to the fluids.

Dr. Minney, of Topeka, told of a case where he had removed an eye because of sympathetic trouble, glaucoma set up in the other eye and a broad iridectomy was done, relieving it for a short time. He had done a paracentesis on that eye some 40 times, covering a period of two years. That was eight years ago and the eye is well to-day.

Dr. Ringueberg, of Lockport, told of a case wherein operation had been done for glaucoma in both eyes, which has recurred a number of times. He has noticed that a slight blister forms at the margin of the same, and he pulls down the lid and ruptures the blister, thus freeing it from the glaucomatous symptoms, this occurring about every two weeks.

Dr. Friedmann said it should be borne in mind that glaucoma following operation would seem to imply faulty technique and he thinks certain steps in cataract operation are partly to blame for this development. The capsule is the troublesome thing, and if there were a method of opening it that would keep up the tags there would be comparatively few cases of glaucoma. The ideal operation is to remove the capsule, no matter what the disadvantage.

Dr. H. B. Young described three cases he had seen of this condition following operation. He said he failed to understand why a tag of capsule in one part of the filtration zone is going to precipitate an attack of this kind.

Dr. A. E. Bulson, closing the discussion, called attention to the fact that the paper dealt with that class of cases in which the filtration angle is not mechanically blocked. He believed there were other factors back of it. Referring to the albuminous exudate spoken of by Dr. Jackson, he said he had recently had occasion to examine after repeated paracentesis, but had not been able to discover any perceptible increase in the exudation of albumin. A cystoid scar is of decided advantage to a patient, as it has a tendency to prevent glaucoma. The reason secondary discission is preventive of glaucoma is because it prevents the traction which causes an inflammation of the turgid tract. The constituency of the intraocular fluids is changed, and they do not pass out through the filtration angle as readily as do the natural fluids, thus causing a blocking. The salvation of these cases is in treating them not only systemically, but surgically as well.

The Further Study of the Horopter, Considering the various Horopters Devised by Different Men.

Dr. G. C. Savage, Nashville, Tenn., stated that the circle of binocular single vision should not be called the horopter, but should be called either the isogonal circle or the monoscopteric circle. He stated that there is one primary isogonal circle and many secondary isogonal circles, and that the planes of all these circles intersect each other at the line connecting the centers of the two eyes, this line being a cord common to every one of the circles. In ocular rotations the primary circle is made to take the place of that secondary isogonal circle on which was located the second point of view before the rotation began, and in doing so the visual axes are kept in the primary circle by the superior and inferior recti muscles and that these axes will be shifted towards and converge at the second point of view the moment the primary circle has displaced the secondary one, and that the horizontal meridians have been kept continuously in the plane of the primary circle as it is being rotated.

Some Experience with Simple Glaucoma and Conclusions on the Value of Operative and Non-Operative Treatment.

Dr. H. B. Young, of Burlington, Iowa. Dr. Young said this question would not fail of discussion as long as three questions remained unanswered: 1, What is the pathology of glaucoma? 2, How shall we distinguish inflammatory from non-inflammatory? 3, What is the measure of relief attainable in this disease by either mode of treatment? He had nothing to offer in answer to the first question, but in regard to the second he reviews the literature which shows that most writers consider chronic glaucoma and simple glaucoma stand alike for non-inflammatory glaucoma. The difficulty of differential diagnosis between simple glaucoma and optic nerve atrophy is mentioned, likewise the slowly increased dimness of vision. Tension may be increased moderately or not at all, and the pupil may or may not be dilated and sluggish. In short, it is atypical glaucoma as compared with inflammatory or congestive glaucoma. Cases of inflammatory glaucoma which have short prodromals and about which there is no question of diagnosis are scarcely more common, but in the few he had seen with normal pupils he had never seen inflammation and rapid loss of vision. Confusion would be saved if the indefinite use of the word "chronic" were done away with. An agreement should be had on this as on prism measurement. With regard to the measure of relief obtainable, taking the result of Derby's case as typical of the measure of relief by the operative method, and the result of Posey's case, supplemented by those of the author, as typical of same by the non-operative method, it would seem that the prospects are more for palliation than for cure either way; and the relative value of the two methods becomes a matter of computation between the risks of sudden total loss, postoperative cataract or "dazzlings," and chances, remote, for permanent relief and average for a longer lease on vision. The balance may be in favor of the operative method, but it is surely not great enough to warrant criticism of the man who says to his patient, "Take your choice." The balance is overwhelming in favor of the operative method in those cases showing either the dilated sluggish pupil with shallow anterior chamber, steamy cornea, pain or rapid loss of vision, no matter how free from inflammation they may seem to be.

DISCUSSION.

Dr. Park Lewis, of Buffalo, said that he thought as the doctors were becoming better physicians they were becoming better ophthalmologists, and one of the most promising signs of the times was the discussion had on the bearing of blood pressure on ocular conditions. He thinks that toxemic conditions may have antedated the blindness for some time, and as different poisons are better understood this simple glaucoma may be shown to be really a toxemia, and research along this line would well repay one.

Dr. Jackson, of Denver, said that keeping before the mind the discrimination as to the different kinds of glaucoma is needed to clear up the ideas with reference to the therapeutics. He thought operation advisable in those cases which were free from inflammatory attacks, but have well-marked exacerbations. They have some dilatation of the pupil, impaired vision and often decided rise of tension. The point is made that the rise of tension is more apt to occur late at night than any other time in the 24 hours, and it might be well for physicians to visit their patients occasionally at this time and test the tension. In cases, especially in young patients, where they have gone on for several years with impairment of vision, but without any attack attended with pain or hyperemia about the eye, they have yielded to iridectomy as well as any cases of inflammatory glaucoma. He would rather divide glaucoma by the line of the exacerbations, although even simple glaucoma at a late stage predisposes the eye to inflammatory attacks which simulate inflammatory glaucoma.

Dr. John Green, of St. Louis, said he was especially interested in the idea advanced by Dr. Lewis, of searching for underlying causes, especially in cases of glioma simplex. In a case he had treated for years he had at last called an internist for careful examination and found that the patient had a congenital deficiency in the muscular tone of the stomach and intestines, which had produced constipation, and had been continually absorbing noxious material from the intestine, which gave rise to an optic neuritis of a low grade which, through some weakness of the lamina cribrosa, cupped the disc. It is important to impress on these patients the necessity of rigorous adherence to the pilocarpin and eserin treatment. In addition to this, the general hygienic management of the case is absolutely essential.

Dr. Alt thought it astonishing that more cases of the kind just described were not seen.

Dr. Ringueberg said he had sometimes considered glaucoma more as a symptom than as a disease, some of them being simple and mechanical blocking of the anterior chamber. In the cases seemingly toxemic, it is probable that the channels are blocked up in that way.

Dr. Lamb, of Washington, said that even in periods of formation of tension we may get even the minus tension in conditions of simple glaucoma. Operations, to be of use, should be done when the field is slightly contracted and the vision only slightly impaired.

The patient must stimulate the physician in some way to a better understanding of which method is better for that particular case and as to whether they will cooperate with you in the pilocarpin and eserin treatment.

Dr. Young said his purpose was to secure a better classification of glaucoma, so as to avoid the confusion arising in literature, and suggested that ophthalmologists unite on some simple plan. All agree that there is a class of glaucoma that should be operated on. Then there is a second class on which perhaps the majority operate, but they are not united on a method by which this should be done. One says a 6 mm. section, another one-third of the iris. A third class they claim are cured by a myotic when the cases are not idiopathic. Improved technique does not always account for the best results, as the most satisfactory result the speaker had ever had from iridectomy was surgically the poorest, while one of the best iridectomies he had ever made resulted in total failure. He brings it down in all his cases to the crucial question, "If I had this condition, what would I have done?" That removes it from academic discussion and makes it a personal matter. He is sure that the majority can be cured by operation.

Angiosclerosis of the Eye.

Robert Scott Lamb, of Washington. The essayist gave the causes leading up to angiosclerosis as congenital anomalies, syphilis, faulty metabolism, toxic agents, including alcohol, tobacco and the toxins of the organisms of acute infectious diseases. He gave the histologic anatomy of the various ocular tunics and ocular vascular supply. He said the early pathologic changes were, of course, similar in all tissues, differing in so far as surrounding tissues permit. With the slightest disorganization of the vessel wall there is transudation from the vessel into the contiguous tissue. In the retina this causes an edema that may be limited to the nerve fiber layer and is readily remedied, but which may affect the outer nuclear layer, in which case complete recovery can not take place. If the inflammation progresses beyond the edematous stage an exudation of plasma and polynuclear leucocytes occurs into the adventitia and perivascular space and thus there is the beginning of the silver wire vessels. In the smaller vessels the endothelium proliferates and there is increased connective tissue formation. These changes usually occur first in the retina, where the vessels are smaller; next the inflammatory process appears in the choriocapillaries; next in the medium-sized vessel layer; next in Haller's layer, and later still in the sclera. With the ophthalmoscope there is seen to be a hazy disc and retina, possibly obscuration of the capillary vessels and apparently nodes of interruptions in them as they cross the disc or approach the macular region, with a tortuosity; white bands or lines of the larger vessels, arterial pulsation and perhaps spasm, aneurismal dilation, perhaps hemorrhage into the retina and chorioid, or the chorioidal vessels may show white streaks or bands. Chorioretinitis or neuroretinitis is seen and other signs of degenerative or proliferative changes. The fields are liable to be contracted in proportion to the amount of destruction present. The subjective symptoms vary, there being temporary scintillation, scotoma, temporary blindness, headache, asthenopia and progressive failing or weak vision. The prognosis is favorable or otherwise, according to the period at which the lesions are discovered. If discovered at an early stage the loss of visual acuity is only temporary, amounting sometimes to 90 per cent. and often to more than 50 per cent. Without the helpful cooperation of the patient in carrying out the instructions of the physician there can only be recurrence and ultimate failure from any kind of treatment. The treatment consists in correcting any disturbance of digestion, regulating the blood pressure, restricting the fluid intake and reducing the quantity of salt ingested to prevent retention of excess of fluid; the administration of nitrates, of iodids, the use of pilocarpin, baths and packs, and the use of strychnia or nux vomica. Locally the use of hot moist applications of salt or boric acid, and subconjunctival injections, and dionin in some cases. The sequel may be any disease that may result from congestion of the vessels, from a simple retinitis to retinitis pigmentosa or hemorrhagica, to cataract, glaucoma, embolism of the central or branch arteries or thrombosis of a branch or central vein.

DISCUSSION.

Dr. Park Lewis, of Buffalo, said it suggested a point in diagnosis, subconjunctival hemorrhages being frequently found in conditions which precede or accompany atheromatous conditions, which had frequently led him to question what bearing they had on subsequent cerebral hemorrhages. The smaller retinal hemorrhages he had found to be followed by cerebral hemorrhages within a week.

Dr. Alt inquired as to what particular good the essayist expected from dionin in these cases.

Dr. Edward Jackson said that from the general literature on this subject one would be led to regard it as a general process. Of course, when a certain vessel is found to be decidedly affected there is a possibility that others are affected, but as far as he had observed it is always partial or much more advanced in some vessels than in others, and on this account the signs may often escape observation, as a small vessel or group of vessels, or a small twig on different branches of the retinal artery will show unmistakable signs, when the greater number of vessels visible show no sign whatever. This is true not only of the beginning, but also quite advanced vascular changes. It is on this account that there has been so much uncertainty about the process and also the prognosis from what is observed in the eye. It might be possible to have it quite advanced in the eye and no serious changes in other vessel areas. The sign that seems to him the earliest is the change in the color of the optic disc, though not definite enough to rely upon altogether and not present in all cases of arteriosclerosis—a dull brick-dust appearance.

Dr. Connor, of Detroit, said that about thirty years ago, when much less was known about angiosclerosis than now, Dr. Richey, of Washington, emphasized the fact that these diseases were due to retention in the blood, in the body and in the tissues of materials that ought not to be there. He taught the necessity of getting rid of these things by elimination and preventing their reformation by proper modes of life and hygiene, which is exactly the point being taught by the essayist and the discussion to-day, and as the years had passed this idea had been the most helpful one to the speaker of anything in ophthalmological work, aside from refraction and operative procedure. That there is an underlying cause in the nutrition he thinks is positive. It was important that one be a doctor first and an ophthalmologist afterwards.

Dr. George F. Suker, of Chicago, said that angiosclerosis had been pretty well proven by pathologists to be always due to infectious processes. The question of age has nothing to do with it, and he had seen it quite advanced in the young, under 20, as in those over 80. The history of infections disease the patient has had prior to the ocular lesion should always be taken, and one should not say it is congenital malformation of the retina when this history has not been ascertained. There will be increased tension at some time of the day, depending on the amount of the toxin. In examining the fundus, the retinal haze is better observed by commencing with a low candle power and gradually increasing it to the maximum. The minute vessels are mostly affected before the large ones and if the field of vision is taken a diminution of perception will be shown. Conjunctival hemorrhages are more prognostic as a whole than retinal hemorrhages, because the latter are due to mechanical causes. The small vessel breaks first.

Dr. Green, of Dayton, said the causes of arteriosclerosis could be grouped under three heads, as suggested by Nichols, of Washington: 1, strain; 2, heredity; 3, toxic action and malnutrition. In the 910 cases he had reported, he had only seen three cases of subconjunctival hemorrhage, and he would not attach great importance to it. A confusing point is the localized character of the angiosclerosis, and the location of the disease probably has much to do with the amount of pressure. It is generally supposed that if the location is above the diaphragm there would be more pressure in the larger vessels.

Dr. H. B. Young asked that Dr. Lamb say something of what he meant by "early treatment," as in his experience these cases are not seen until well established.

Dr. Lamb, closing the discussion, said he thought the retinal hemorrhage was much more indicative of arteriosclerosis in the vessels of the brain than is the conjunctival hemorrhage, as the vessels are much more closely associated. The conjunctival hemorrhage is more suggestive of kidney lesion. Dionin is given to reduce intraocular tension, simply as a temporary matter. In the early stages sodium iodid is used, or perhaps a little tincture of nux vomica, and it should be seen that the bowels are well opened. Blood pressure is good corroborative evidence, but not to be relied upon altogether. Normal pressure is entirely different in different people.

Methods of Illuminating Test Type Charts with Artificial Light.

Dr. Nelson M. Black, of Milwaukee, said there is certainly more irradiation from a card illuminated by reflected light. Light as it emerges from translucent charts is much softer, more like daylight and much easier on the eyes because it is perfectly diffused. The orange yellow of the light source is to some extent filtered out; the contrast between black and white is much sharper. The variety of test cards that may be used is as unlimited as with reflected light. They give nearer the conditions under which objects are actually seen in using the eyes for distant vision. It gives a more perfectly diffused light, free from confusing surface reflections and luster. The intensity may be controlled perfectly by means of a rheostat and the intensity measured. As large or small a portion of the chart may be illuminated as desired, and the letters, being opaque, are seen perfectly black. The essayist did not agree with Dr. Gould's contention that letters should be white on a black ground. The ideal lamp is of clear glass tubing, seven-eighths of an inch in diameter, with the filament running straight the entire length, giving a solid line of light twelve inches long. The reflector is metal lined with porcelain or opal glass, giving perfect diffusion of light. He described a cabinet he had devised and said the lamps could be obtained of the O'Brien Electric Company of Philadelphia.

Defect of Abduction Associated with Retraction of the Globe in Adduction.

Dr. John Green, Jr., of St. Louis. The most conspicuous signs of this congenital anomaly of the ocular muscles are: partial or complete defect of abduction, some limitation of adduction, and retraction of the globe into the orbital cavity. A review is given of the literature on the subject, which does not generally recognize the condition as a clinical entity, most authors simply describing the anomaly. The author reports a typical example under his own observation, presenting all the features described by Duane as typical, i. e., partial absence of outward movement, partial absence of inward movement, retraction of the globe in adduction, a sharply oblique movement up and in and down and in, in adduction, and, finally, paresis of convergence. It is inconceivable that the causative factors should be other than peripheral. The absence of abduction is explained on the supposition that the external rectus is absent or replaced by an elastic or inelastic connective tissue cord. Some authors attribute the faulty outward movement to a faulty insertion of the externus far back on the globe. The restriction of adduction is capable of two explanations: with an inelastic externus the normally inserted internus is thereby prevented from exercising its full function, or the internus is inserted too far back on the globe to exert any notable inward rotation, this function being assumed somewhat ineffectually by the conjoined action of the superior and inferior recti. Much uncertainty exists as to the cause of the narrowing of the palpebral fissure when the affected eye is directed inward. It has been attributed to a passive "falling in" of the lids on account of a lack of their natural support on the retraction of the globe. The inefficiency of convergence seems to be due to a mechanical hampering of the action of the affected internus. Little can be done in the way of treatment beyond correcting the refractive error. Results of operation, in the few cases in which it has been tried, hardly justify the procedure.

DISCUSSION.

Dr. Jackson said that in his similar case it seemed to him that the retraction was due to the rotation of the globe not around the ordinary center of rotation, but around a center somewhere in the region of the attachment of the defective externus muscle.

The Prophylaxis of Ophthalmia Neonatorum.

Dr. F. Park Lewis, of Buffalo, presented this paper. He said that the fact that so large a number of cases of blindness occur every year as a result of this infection, which should have never occurred, emphasized the fact that, first, all should have a clear understanding of the conditions producing it, and, second, there should be an organized and concurrent movement for their control. This is not a medical subject only; it is one of the forms of diseases which, like tuberculosis, affects the entire community. Social workers, when once the subject is understood, will prove to be important factors in effecting its control. But they must know what it is, how it is acquired and how avoided. A regular and systematic campaign of education should be carried on by some properly constituted authority. This should obviously be the work of the department of public health, which should issue circulars of advice giving mothers and midwives directions as to the necessary precautions. Many physicians do not understand what should be done and how it should be done. Would it not, therefore, be advisable for this Academy to speak authoritatively on the subject? While it is impossible at this time to eliminate midwives, who will continue to do their vitally important work where two human lives and the child's eyes depend upon their cleanliness, it is essential to put these women under the authority and control of the health boards everywhere until gradually they can be replaced by trained physicians. They should, among other measures, be advised how to manage the toilet of the eyes immediately the head is born and should be supplied by a safe prophylactic by the board of health. Failure to use it, when negligence can be shown, should subject the offender to fine and loss of license. A disease occurring sporadically and which is endemic can be controlled only by organized and controlled effort, and in order that no false move be made the procedures to be determined upon should originate with the ophthalmologists and the obstetricians; their practicability must be assured by those expert sanitarians engaged in public health work. Then the measures recommended should be carried out by an organized movement in every state in the Union. Such a concerted effort would in a short time so limit infections and improve methods of treatment that the disasters following ophthalmia neonatorum would practically cease, this prolific cause of blindness would be controlled, millions would be saved to the commonwealth and the happiness and efficiency of humanity enormously augmented.

DISCUSSION.

Dr. Alt called attention that the one drop of nitrate of silver solution (1 per cent.) should be dropped absolutely in the center of the eye, so that it will spread equally to all parts.

Dr. Moore, of Ohio, said that he had sometimes found physicians using nitrate of silver solution that had lost its efficiency; this could be preserved by adding a drop of dilute nitric acid, which makes it only slightly more irritating. In regard to argyrol, it gives good results in 50 per cent. solution, but not in 30 per cent.

Dr. Suker said protargol is far in advance of argyrol, and he could grow bacteria in any per cent. of the latter.

Dr. Jackson and Dr. Brown, of Columbus, oculist to the Ohio Institute for the Blind, agreed with the essayist in regard to the proper method of bringing these matters before the public.

Dr. Faith, of Chicago, suggested that much might be accomplished by properly teaching the students the importance of these matters.

The Academy then received the following report from its committee appointed to cooperate with the Committee of the American Medical Association on Legislative Measures to prevent ophthalmia neonatorum:

REPORT OF COMMITTEE.

"It is well known that ophthalmia neonatorum is the cause of a large portion of the blindness in the United States. No fact in medicine has been more thoroughly established than that it is a preventable disease in a vast majority of cases. Granting this, your committee submits that every state should enact laws having for their purpose the adoption of measures for the prevention of its development, at least in public institutions where obstetric cases are received, and in the practice of midwives. Precedence has long existed in enactments requiring the carrying out of certain methods and treatment to prevent smallpox and other infectious diseases.

"The state department of health seems to be the proper authority for establishing the necessary rules, regulations and ordinances and enforcing their observance, and for publishing and distributing appropriate information and instruction on the subject.

"This committee, as will be seen by the draft of law hereby suggested, is of the opinion that legislative action on this subject should at present be limited to the obstetric practice in public or semi-public institutions and to the practice of duly licensed midwives, otherwise leaving the use of prophylactic measures to the judgment and discretion of physicians.

"This committee further believes that the specific methods to be followed in the prophylaxis of ophthalmia neonatorum should not be stated in any law, but should be left to the intelligence and judgment of the department of health of each state respectively, presuming that it will act in accordance with the most advanced existing knowledge.

"The following form of law is recommended to the Committee of the American Medical Association as a basis for legislative action to be modified to suit the needs and legal situations in each state, and the members of this Academy are urged to cooperate, both individually and collectively, with said committee to secure its enactment:

"AN ACT TO PREVENT INFLAMMATION OF THE EYES OF THE NEW-BORN BABE, OR SO-CALLED OPHTHALMIA NEONATORUM.

"Section 1. The department of health of this state is hereby vested with power and authority to publish and distribute such information and instruction, to furnish such remedies, and to make such rules, regulations and ordinances as it may deem expedient to prevent the development of inflammation of the eyes of the new-born babe, or so-called ophthalmia neonatorum, in public hospitals or institutions in which midwifery is practiced either wholly or in part, and in connection with the practice of legally licensed midwives.

"Sec. 2. Said department is authorized to enforce its rules, regulations and ordinances at the expense of the state.

"Sec. 3. Any person violating any rule, regulation or ordinance of said department of health regarding the prevention of ophthalmia neonatorum shall be guilty of a misdemeanor. This act shall take effect immediately.

(Signed) "ALVIN A. HUBBELL,
"ALBERT R. BAKER,
"EDWARD JACKSON,
"*Committee.*"

On motion duly supported, the Academy unanimously adopted the report of this committee and commended it to the like committee of the American Medical Association.

Magnetic and Non-Magnetic Properties of Iron Alloys.

Dr. Mortimer Frank, of Chicago. The author said the subject was of considerable importance to ophthalmologists, especially those working in the vicinity of steel mills, as the increasing use of the alloys of iron have resulted in marked changes in the quality of steel manufactured, particularly affecting its magnetic quality. He discussed those alloys of iron which are non-magnetic or nearly so even in strong magnetic fields, and, second, those more magnetic than the purest commercial iron. Dr. Frank described the case of a man working on a dynamo bed plate, brought to him to remove a splinter of the iron. The wound was 10 mm. long and extended from the front nasal side of the sclera into 3 mm. of the cornea. The lens was ruptured so that a view of the fundus could not be obtained. Under anesthesia an attempt to extract by the use of the giant magnet failed, but on enucleation the splinter was found, it being a non-magnetic alloy of the iron.

DISCUSSION.

Dr. Black said it would be a good idea for ophthalmologists to learn which manufactures of steel are magnetic and which non-magnetic.

Dr. Alt said the usual explanation, when one had difficulty in extracting steel imbedded in the eye, was that it was encapsulated in lymph, which he had always regarded as a weak excuse for non-success, and this theory was perhaps a better explanation of many of these cases.

Dr. Connor said it was a great mistake to assume that when one is unable to get the piece of steel with the magnet that the steel is not there.

Dr. Green, of St. Louis, said that the character of the steel should be ascertained from the firm for whom the patient worked.

Vibratory Massage in Ophthalmology.

Dr. Leartus Connor, of Detroit. Dr. Connor said that it might be inferred that vibratory massage augments the outflow of lymph and venous blood from the eyeball and the inflow of pure arterial blood with more rapid lymph and aqueous formation. It places a new force at the clinician's disposal. To the pressure and varied motions of finger massage the vibratory adds a great variety of vibrations, not only at point of contact with the eyeball, but simultaneously at all other parts and adjacent tissues of the orbit, and to an undetermined extent along the vessels and nerves. It can not be doubted that such vibrations arouse to more normal activity all cells concerned in either eye nutrition or the acts of seeing. Vibratory massage reduces ocular tension, accelerates intra-ocular circulation, clears the media, deepens the red reflex of the fundus, improves vision and promotes ocular comfort. It is not a treatment for any specific disease, but it is a force capable of favorably influencing the underlying pathological conditions in many diseases.

organic or functional, by improving some factors of nutrition. It demands an instrument adapted for use on the eye, its perfect control by the operator, a definite knowledge of existing pathological conditions, a full comprehension of the nature of the force employed and common sense in technique. The best methods for its use must be worked out separately in each case. If the symptoms be slight, massage may be more frequent and energetic. Some cases need daily treatment, while others twice or more a week, from one to ten minutes at a sitting. Subjectively patients are more improved by weak massage for brief periods. After long sittings they do not see so well, but improve later.

DISCUSSION.

Dr. Green, of St. Louis, said that a weak solution of dionin was beneficial sometimes in neurasthenic individuals where the most painstaking correction of refractive errors and muscular unbalance failed to give relief.

Dr. Friedenberg said it was a question whether massage should be applied for the clearing up of opacities of the lens until more is known as to how pressure acts on lenticular opacities. There are opacities which clear slightly, sometimes permanently, but more often the changes are only temporary.

Can a Substitute for Simple Enucleation be Employed in Every Instance?

Dr. George F. Suker, of Chicago. The object of the paper was not so much to critically discuss the various methods and operations which can be employed as a substitute for simple enucleation, as to call attention to the very potent fact that whenever an enucleation is indicated or performed some substitute which will yield a more prominent stump is not only indicated, but absolutely justifiable. Unless the surgeon does make an effort or employ methods to produce a prominent stump so as to minimize the future deformities, he is not doing full justice to his patient, for every operation about the face has two distinct and separate end-views: primarily and essentially, curative; secondarily, a cosmetic value. To operate only for cure or relief, unmindful of the ensuing deformity, is likewise not doing one's full duty towards his patient. A substitute for the simple enucleation, of the Adam Frost's type, either directly at the time of the operation or at a near subsequent time, should and can be safely employed. Subsequent implantation should be done before firm cicatrization of the orbital tissues has taken place. This should be done within two or three weeks of the primary enucleation. Though the cosmetic result may be enhanced later, yet the range of motion is not benefited. The Mules' and the Adam Frost's type only are considered, as all others yield comparatively insufficient prominency of the stump, the Frost type being the author's favorite. Of materials employed for implantation, only two were thought worthy of consideration, i. e., lead-free glass and decalcified bone, and of these the former is the choice. Any other material than this is, in the course of time, affected by the body juices, and we know that our economy furnishes no acids or alkalies which affect lead-free glass. Age is no contraindication for an implantation. It is even more obligatory in the very young, as it favors the uniform development of the socket. The objections to simple enucleation are: The orbital fat and muscles atrophy and sink back into the orbit, leaving a large cavity. The upper lid invariably falls back into the orbit, the lower lid only too frequently droops. The stump movements are very imperfect, and the movements transmitted to the shell from this atrophied stump are relatively small. The vacant stare, which is such a deformity, is always present, many patients preferring an empty socket. There is so much space between the concave shell and the stump for the accumulation of secretions, which frequently decompose and violently irritate the conjunctiva, causing the proverbial chronic conjunctivitis, and this discharge roughens the shell. Because of this irritation adhesive bands are readily formed between Tenon's capsule and the subconjunctival tissue. The cul-de-sac is, therefore, gradually lessened in depth until finally it is so nearly obliterated that it is difficult to even insert a shell. The only time an implantation can not be done immediately at the time of operation is perhaps when one is dealing with a suppurating globe, under which circumstances one can eviscerate, wait until suppuration has ceased, amputate the scleral cup and proceed in a manner like unto the simple capsule implantation. The argument of sympathetic irritations following capsule implantations is not well founded. An implantation can only produce so-called sympathetic irritation and not inflammation, just as any stump may cause an irritation. Then the removal of the sclera, followed by capsule implantation, will be a satisfactory and justifiable procedure. The patient should regularly and forcibly exercise the lids, whatever method is employed, to prevent any sinking in of the upper or drooping of the lower. This is further guarded against by preserving the sympathetic nerve fibers which supply the two. For this reason the lenticular nucleus should be preserved and the capsule posteriorly should not be opened more than just sufficient to permit the passage of an instrument for the severing of the nerve. The method of preparing the sphere and the manner of fixing the caruncle and muscles were described.

DISCUSSION.

Dr. Friedenberg said there were two objections to the method, one, the including of a foreign body in the tissues of the body; the other, the added danger of any injury to the eye which contains a glass globe under the conjunctiva.

Dr. Green called attention to the gold ball of Fox, which seems to be in great favor in Philadelphia.

Dr. Alt said there was a silver wire ball of Landman, of Toledo. He had always been satisfied with the results of careful enucleation and never used substitutes.

Dr. Baker said that if the enucleation was properly made and the globe inserted two or three days afterwards there would be no sinking in of the orbital tissues.

Dr. Suker, replying to Dr. Friedenberg's objection, said that statistics regarding implantation and non-implantation showed that the former caused no irritation. He had had them in for 15 years without extrusion or other objection. He had tried using paraffin and plaster of Paris, but the result is the same as to shrinkage ultimately. The size of the socket should be taken into consideration, a small, sunken eye not making it so noticeable as the prominent, full eye.

A Study of Refraction Based on Four Thousand Cases.

Dr. J. F. Byington, of Battle Creek. Objective tests have a fascination and value which all must acknowledge. They inspire confidence in the mind of the patient, and the accuracy of their results is not dependent on the varying perceptive powers of the patient. But zeal for objective methods should not make one less thorough with the subjective test. This requires more patience on the part of the examiner, but the author believes it more accurate than any objective method yet evolved. The results of the objective examination should always be proved, or improved upon by a careful use of the trial case. When convenient, the examination of patients under 40 years of age is divided into three parts, on three different days, the patient thereby being less fatigued, and it taking no more of the examiner's time. At the preliminary examination the patient's history and leading symptoms, vision in each eye, strongest convex or weakest concave sphere accepted with both eyes uncovered, ophthalmometer reading and the balance of the extrinsic muscular apparatus, the ocular tension and the external appearance of the eye as determined by inspection and oblique illumination, are obtained and recorded.

At the second examination homatropin cycloplegia is induced, the drug being administered by the office assistant, the patient being ready for examination about one hour after the first instillation. The total refractive error is determined by use of the trial case, supplemented, if necessary, by retinoscopy. A careful examination of the fundus is also made with the ophthalmoscope.

The third examination is made after sufficient time has elapsed for the effects of the cycloplegia to pass off. The patient's manifest is carefully taken, with the results of the previous examination as a guide, and the prescription is made after carefully considering all the data of the examination and history. The author uses Snellen's letters only for all those who can read them.

The technique of subjective measurement of refraction is described under two heads, the determination of the manifest and the determination of the total. The former will apply to persons without cycloplegia up to 40 years of age and to a certain extent up to 50 or 55 years of age. The latter will be applicable to all persons under cycloplegia and in older persons having little or no accommodation. Minute details are given. Some of the factors to be observed in writing the prescription are the manifest, the total, the muscular balance, the age of the patient, his occupation, the glasses he has previously worn and the condition of his general health and that of his eyes. Oculists who use cycloplegia are inclined to make the mistake of giving too strong a correction for the hypermetropia than too weak.

Speaking of the toric lens, the advantages are given as a larger field of vision and that they enable the lens to be set nearer the eyes without touching the lashes. The former applies especially to stronger foci. An objection made by some patients is the strong glare of light which is reflected from their surfaces, and which at certain angles prevents their friends from seeing their eyes. In the correction of aphakia if a periscopic lens is prescribed, it must be prescribed weaker than if a double convex lens is used.

DISCUSSION.

Dr. H. B. Young said that in prescribing for astigmatism, especially in myopics, his idea had been not so much to make them mathematically perfect as to make the patient comfortable, that being the height of his ambition when he sees a patient in distress.

Dr. Dudley Reynolds, of Louisville, spoke of the faulty carriage of the head with many patients, and said he had little confidence in any of the methods other than the stenopeic disc of Donders.

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

Dr. Arthur Snydacker, of Chicago, sailed for Europe on September 19.

Dr. Josef Meller has taken up private practice of ophthalmology in Vienna.

Dr. Robert E. Moss has resigned from the San Antonio (Texas) Board of Health.

Dr. Max zur Nedden, of Bonn, Germany, has received the title of Professor of Ophthalmology.

Dr. Arthur Brückner, formerly privatdozent at the University of Würzberg, has located in Königsberg.

Dr. E. Reid Russell is to be ophthalmologist to the Charlotte Sanatorium soon to be opened in Charlotte, N. C.

Prof. Dr. Leopold Heine, of Greifswald, has accepted a call to the chair of ophthalmology at Kiel, to succeed Professor Schirmer.

The Indiana University College of Medicine has added Dr. H. G. Parker, of Boston, to its faculty. Dr. Parker is to be assistant professor of ophthalmology.

Dr. Wm. H. Wilder, Professor of Ophthalmology and Otology in Rush Medical College, Chicago, was operated upon, October 16, for strangulated hernia, by Dr. A. H. Ferguson.

The new Baptist Sanatorium at Houston, Texas, is now open. The staff members for eye, ear, nose and throat are: Drs. Wallace W. Ralston, Geo. P. Hall and William L. Rogers.

An aurist desiring a position in one of the best otological clinics in Chicago can find such a position by addressing the Editor of The Ophthalmic Record. 72 Madison street, Chicago.

Dr. Thomas A. Woodruff, Chicago, has been appointed chairman of the Committee on Entertainment for the meeting of the American Medical Association, which is to be held in Chicago next June.

A notice has been issued through the Mexican-American Steamship Company by the quarantine physicians of the Mexican Government, to the effect that no immigrants suffering from trachoma will be allowed to enter Mexico.

Dr. Mortimer Frank has been appointed ophthalmic surgeon to the West Side Hebrew Dispensary, at Morgan and Maxwell streets. Chicago. Dr. Frank is now Secretary of the Chicago Ophthalmological Society, having been elected by the council to fill the vacancy caused by the resignation of Dr. E. V. L. Brown.

Carmen Sylva, the gifted writer, who is Queen of Roumania, has established a city for the blind, of which there are 40,000 in her kingdom. Provision is made for suitable employment to occupy the minds and hands of the blind citizens and a ferm of printing has been devised by the Queen's blind secretary.

Dr. Wm. H. Wilder, Dr. T. A. Woodruff and Dr. Mortimer Frank were appointed as a special committee on entertainment, to represent the Chicago Ophthalmological Society and to cooperate with the central committee to entertain the visiting ophthalmologists at the meeting of the American Medical Association in Chicago next June.

The recent medical inspection of schools in Chicago resulted in excluding 8.3 per cent. of the pupils examined on account of the following contagious diseases: Tonsillitis, 315; pediculosis, 278; impetigo contagiosa. 188; scarlet fever, 120; scabies, 99; diphtheria, 84; whooping cough, 66; purulent sore eyes, 45; measles, 42; mumps, 41; chicken pox, 32; tuberculosis, 3.

THE *Scientific American* recently published an article by Mr. Ernest Vaughan describing an apparatus which makes it possible for the blind to correspond with each other or with the seeing. The apparatus is a portable printing apparatus, having a rack provided with grooves into which notched type may be fitted. The type has the Braille character on one side and the Roman equivalent on the other. Having filled the rack, the sentence is printed upon paper which may be slipped under the rack between guides.

THE Ophthalmic Department of the Tung Wah Hospital, Hong Kong, was opened in December, 1905. The department in the beginning was open on only one day a week, which has been increased to two days a week. The *British Medical Journal* states that eye diseases are almost as prevalent in China as in Egypt. In 1903 Dr. Harston, medical director of the hospital, examined the eyes of the children in three large institutions and found 70 per cent. suffering from trachoma. Ophthalmia neonatorum and trachoma are the chief causes of blindness in China. Dr. Harston has been much handicapped by lack of instruments and ophthalmic apparatus. A system of traveling hospitals similar to those in operation in Egypt is being planned.

THE meeting of the Academy of Ophthalmology and Oto-Laryngology held in Louisville, Ky., September 26, 27 and 28, was well attended and a most successful meeting. The meetings of the Section on Oto-Laryngology were particularly well attended and the papers were of unusual interest. The officers for the coming year are as follows: President, Dr. Derrick T. Vail, of Cincinnati, Ohio: First Vice-President, Dr. Joseph Beck, of Chicago; Second Vice-President, T. B. Schneideman, Philadelphia; Third Vice-President, F. S. Owen, Omaha, Neb.; Secretary, Dr. Geo. F. Suker, Chicago; Treasurer, Dr. Otto J. Stein, Chicago. The Council comprises the following: Dr. Derrick T. Vail, Cincinnati; Dr. Wm. L. Ballenger and Dr. Casey Wood, Chicago; Dr. Alvin H. Hubbell, Buffalo; Dr. Jos. A. Stucky, Lexington, Ky.; Dr. Wm. L. Dayton Lincoln, Neb.; Dr. Alfred R. Baker, Cleveland, Ohio. The next meeting will be held at Cleveland, Ohio.

THE following extracts from *The Journal* of the American Medical Association show the work being done in the proper care of school children. No opportunity should be lost to emphasize the far-reaching importance of this work, and THE RECORD wishes to urge upon its readers the necessity for action along these lines. Each man should do a little missionary work in his own locality, and suggestions will be gladly made by the editors of THE RECORD as to the practical measures necessary:

The Chicago Department of Health has divided the city into eleven general districts, each of which has nine subdivisions. Each district is in charge of a medical inspector and each subdivision under the charge of a school medical inspector. Every district medical inspector will direct the work of nine school medical inspectors and will be held responsible for the health of their district. The school medical inspectors will visit every school in the city every school day during the year and will, in addition, do all things calculated to safeguard the health of the pupils and of the families. The vaccination of school children will not begin until after October 15.

The physicians employed by the Committee on Physical Welfare of School Children in New York report that they have examined 1,400 school children since the schools closed. The main troubles were malnutrition, enlarged glands and defective breathing. If the percentages given hold good for all the school children of this city, 48,000 suffer from malnutrition, 187,000 from enlarged glands and 230,800 from defective breathing, a total of 465,800. The object of this report is to prepare the way for the presentation of a plan to improve conditions in a rational way, and the ideas are embodied in the report as follows:

1. A thorough physical examination of all children of all schools.

2. Notification to all parents, followed, when necessary, by a second notice and visits to inform and persuade parents to take proper action.

3. The enforcement of the existing laws and securing proper authority, where this is now lacking, to compel parents who refuse to take necessary steps.

4. Periodic examinations of school children during school life.

5. Physical examination of children when applying for work certificates.

6. Enforcement of health, tenement-house and child-labor laws.

7. The establishment, in connection with boards of education, of departments of school hygiene, whose duties shall be to see that school buildings are so constructed and so conducted that they can not of themselves produce or aggravate physical defects, and that the school curriculum should be so devised and executed as neither to produce nor aggravate them; to study the effect of school en-

vironment—curriculum, building, home study; physical training—on the child, and to teach hygiene so that the children will themselves cultivate habits of health and see clearly the relation of health and vitality to present happiness and future efficiency.

The New York state health and educational departments will act jointly in testing the sight and hearing of the school children in 5,000 school rooms in the incorporated villages of the state. The teachers will conduct the examinations of all children over 7 years of age. Eventually the tests will be extended to all schools in the state.

The English Board of Education has decided to establish a medical department to advise and to assist in regard to medical inspection of school children in England and Wales. Dr. George Newman is made chief medical officer. He has been medical officer of health to the metropolitan borough of Finsbury since 1900. Dr. Alfred Eicholz, who has been for nineteen years a medical inspector of schools, will also be appointed to the medical department.

It is now eight years since the London School Board opened the first invalid center for the instruction of children who, owing to chronic ill health or to physical defect, are unfit to mix with their fellows in the ordinary schools. These schools are principally intended for children suffering from the severer forms of surgical tuberculosis. The number of centers has increased until at the present time there are 23 in various parts of London, accommodating 1,428 children. Ambulances are used to take the children to and from school, and a midday meal is provided, for which the children pay a small sum if able, otherwise it is provided free through the generosity of a voluntary association. Medical supervision and necessary nursing is provided. Dr. R. C. Elmslie, local assistant medical officer to the Education Committee of the London County Council, found among 1,050 of these children 72 not properly included under the conditions for which these schools were primarily intended. This group included semiblind, semideaf and nervous children, unfit to mingle with healthy children in a large school. Of the others, about one-half suffered from tuberculous bone or joint disease, generally in an advanced state, in whom deformity had been produced long before the school age was reached. Assistance is given by the voluntary association in finding suitable work after leaving school. The results, however, are not satisfactory. In criticising the methods, Elmslie points out that voluntary work is not always systematic, and the well-meaning workers have often insufficient technical knowledge and have no power over improvident parents who care more for the wages of their child as an errand boy than to have him apprenticed to a suitable trade. It is estimated that only 20 per cent. of the children will be able to earn their living at any ordinary occupation, 50 per cent. will be able to work at special skilled work, and the other 30 per cent. will either not live or be totally unable to support themselves.

Examination of the school children of Kansas City by city medical officers is said to show that 67 per cent. are affected with some contagious disease or abnormality. Of the pupils, 40 per cent. have weak or defective eyes, 25 per cent. have throat diseases, and 5 or 10 per cent. have defective hearing.

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Original Articles.

A FURTHER STUDY OF THE SO-CALLED HOROPTER, MAKING OCULAR ROTATIONS EASY OF UNDERSTANDING.*

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(Illustrated.)

In his study of optics, Helmholtz made three fundamental errors from which he was never able to free himself. One of these errors was the construction of the optic axis by beginning at the center of the cornea, making this point the anterior pole, carrying it back through the center of rotation and on to the retina, at a point between the macula and disc, making this point the posterior pole. The second error, growing out of the first, was his faulty construction of the visual axis by carrying it from the macula forward, on the temporal side of the center of rotation, to the nodal point, thence through the cornea to the nasal side of the anterior pole, on into space. The third error, growing out of the first and second, was his conclusion that all lines of direction are the axial rays of cones of light which, he taught, cross each other at the nodal point, a few millimeters in advance of the center of rotation. To these fundamental errors is chargeable the fact that no man, not even his brightest pupil, has been able to understand Helmholtz's chapter on the "Rotations of the Eyes." Even he himself must have recognized the murkiness of this chapter, for, when one of his brightest students said to him, "Professor, I have no trouble with any part of your 'Physiologic Optics' except the chapter on 'Rotations of the Eyes,'" he replied, "I am not astonished to hear you so speak. Leave that chapter alone, for, though it cost me more time and thought than any other part, I must rewrite it; then I hope to make it clear." He lived twenty or more years after this conversation, but never rewrote his chapter on "Rotations of the Eyes." If he had been fortunate enough to have discovered the fundamental errors pointed out above, he would have rewritten this chapter and would have made it so strong and clear that no student could fail to understand. With these errors eliminated, ocular rotations are as easy of comprehension as the simplest problem in geometry, which, indeed, it is.

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* Read before the American Academy of Ophthalmology and Oto-Laryngology, Louisville, Ky., Sept. 27, 1907.

Helmholtz's greatness made his mistakes more fatal, for the world stood ready to accept his teachings as scientific truths, nor was the world often disappointed. To controvert him, while he was alive, would have been considered audacious, and no one knows better than I do the hard task one has who dares, even now, to teach for scientific doctrine anything contrary to the dictum of Helmholtz. In admiration of the greatness of Helmholtz allow me to say I am second to no man. His portrait hangs on one of my walls and is an inspiration to me. I ought to love him, if for no other reason, because of the three errors from which he could not free himself, otherwise *Ophthalmic Myology* and *Ophthalmic Neuromyology* would never have been written.

In order that the horopter (better the Maddox isogonal circle) may be understood and its full significance may be appreciated, the conditions underlying binocular single vision must be known, for without the power of binocular single vision (impossible to some) there can be no monoscopteric circle.

The supreme law of binocular single vision is the law of corresponding retinal points. The law of direction does not make corresponding retinal points, else the two images of any one point would always result in single vision, regardless of the relationship of the visual axes and the horizontal retinal meridians to the plane of the primary isogonal circle. To illustrate: It must be conceded that a point and its two images lie in the plane of the same isogonal circle, under normal conditions of refraction. A line of direction goes from the image in each eye and the two intersect at the point, and of necessity they both lie in the plane of the circle containing the three points. Each of these lines is a radius of retinal curvature prolonged and, therefore, the point at which they intersect should be always single, regardless of the relative position of the two eyes, if the law of direction creates binocular single vision. If one eye is turned up or down, the point and its two images still lie in the same plane, and the two lines connecting the two images with the one point are radii of retinal curvature prolonged, but the point is not seen single; therefore, there must be a law for corresponding retinal points other than the law of direction.

This law of corresponding retinal points is founded on an anatomic and not on a psychologic basis. If the cones of the central points of the two maculas have not a common brain connection, binocular single vision is impossible. To simplify: Let us suppose that there is but one cone constituting the *fovea centralis* of each macula; the axone going from this cone in the one eye will pass backward toward the brain and will meet the axone from the foveal cone of the other eye, at the beginning of the one tract or the other. One of the axones having crossed, by way of the chiasm, to meet its fellow from the other fovea, they then go side by side to the corresponding cuneus and terminate in one cell in the cortex of that cuneus. The impression of light on these two cones would be a double impression, but these would be transmitted to the one cell and could excite but a single sensation. If the cones of the two foveas have the proper brain connection, it can be easily conceded that there is no faulty connection of the cones of the two maculas, and that the rods and cones of the two retinas, point for point, have common brain connections. The vertical and horizontal retinal meridians cross each other in their respective foveas. If these points of crossing correspond, that is, have a proper brain connection, then the two vertical meridians will correspond point for point, as will also the two horizontal meridians throughout their entire extent. What is true of these two cardinal meridians must be true of any two oblique meridians which bear a similar relationship to the cardinal meridians, as the two meridians at 45°.

If Helmholtz's law of direction, namely, that the lines of direction are axial rays, were true, corresponding retinal points in any two corresponding meridians would have to be measured in millimeters from the foveas, and not in degrees of arc, for the angle of any two lines crossing at the nodal point would neither be an inscribed angle nor an angle at the center of the retinal curve; therefore, it is not measured by either the half or the whole of the intervening retinal arc. A glance at Figure 2 will show this. It is true that the angle B-n-A in this faulty figure, being an inscribed angle, is measured by half the arc B-A, and the angle c-n-b is equal to the angle B-n-A, for they are opposite angles, but it is not true that half the arc B-A is equal to the whole retinal arc c-b. If we must measure the distance of retinal points from the fovea by millimeters, we should measure the distance between spacial points by meters and not by degrees. Most authors who have not rejected Helmholtz's axial-ray theory have been consistent in that they have measured corresponding retinal points in millimeters from the fovea, but have been inconsistent in that they have measured the distance between spacial points in degrees.

Helmholtz was wrong in teaching that axial rays are lines of direction, and this error grew out of his first and greater error, the incorrect location of the poles of the eye. These errors are alike in that he began at the cornea and worked backward to the retina. He should have started at the retina and then worked forward. It must be universally conceded that the retinal meridians all cross each other at the fovea, nor can it be denied that this point of crossing must be the posterior pole of the eye. How easy now to construct the optic axis by extending a line from the posterior pole through the center of retinal curvature (the center of rotation) to the cornea, and thus find the anterior pole, a course directly opposite the one pursued by Helmholtz. The anterior pole thus located is usually to the nasal side of the center of the corneal curve, but in ideal eyes it coincides with the center of the corneal curve. In all eyes the posterior pole is the fovea centralis, but the anterior pole may or may not be the center of the corneal curve. (The real anterior pole is in the aqueous chamber, just as far in front of the center of rotation as the fovea is behind it.) In every eye the antero-posterior axis, or optic axis, prolonged is the visual axis, as distinguished from all other visual lines. This line is a radius of retinal curvature prolonged, and so are all other lines of vision. Otherwise an isogonal spacial circle with corresponding retinal arcs could not be constructed. The true law of direction, therefore, must be this: "*Every line of direction is a radius of retinal curvature prolonged.*"

Thus stand corrected Helmholtz's three fundamental errors—first, his error in locating the poles; second, his error in constructing the visual axis, and, third, his error of conception that lines of vision are axial rays of light. One holding to these errors can have no clear conception of the primary isogonal circle (horopter), without which there can be no correct understanding of either monocular or binocular rotations. The chapter that Helmholtz would have written on "Rotations of the Eyes," if these three errors had not made his mind murky, can only be conjectured, but I am willing to concede that he would have surpassed any author preceding or following him.

I was not hunting for Helmholtz's errors when I found the true principles of the horopter or isogonal circle, but the light of the truth revealed his errors. Only a few weeks before his death he dictated a letter to me in which he expressed an interest in my then earlier writings. If he were living now I believe he would count himself happy in that an admirer had pointed out his three fundamental errors, and I know that he would have counted himself thrice happy if he could have found them himself.

Soon after *"New Truths in Ophthalmology"* came from the press I was asked, "Have you read LeConte on *'Sight'?"* I was forced to answer I had not. I procured a copy and read it with eagerness. When I had read "The rods and cones see ends on" and "For every retinal curve there is a corresponding spacial curve," it seemed to me that LeConte not only agreed with me that every line of direction is a radius of retinal curvature prolonged, but that he had antedated me in its publication. I did not feel myself confirmed in this view when I saw his horopter, here reproduced, in Figure 1, from his first edition. I reasoned that the rods and cones all pointed to the center of retinal curvature, and that, "seeing ends on," the line of sight must be a radius of retinal curvature prolonged. I knew that "retinal and spacial curves" could not correspond unless they were concentric, so that a line connecting any two points corresponding in degrees must pass through the common center, hence must be a radius of retinal curvature prolonged. In spite of his faulty horopter (Fig. 1), I was ready to give LeConte credit for a great discovery and so wrote him, sending what I had written on the same subject. To my surprise, his reply stated that he had only spoken poetically and graphically when he stated that "the rods and cones see ends on," for he believed with Helmholtz that all lines of direction are axial rays, and that they cross each other at the nodal point. He further stated that my letter had called his attention to the fact that the horopter in his first edition of "*Sight*" was incorrect in that the circle passed through the centers of rotation (Fig. 1) when it ought to have passed through the nodal points. To be consistent, he had to remodel his horopter, which he did in his second edition of "*Sight*," and this remodeled horopter is here reproduced in Figure 2, which, as already shown, is not a mathematical figure and, therefore, can not be the true horopter (isogonal circle).

To put it mildly LeConte's disclaimer staggered me and made me doubt for a moment the correctness of what I had published concerning the law of direction. I have no explanation for his holding to Helmholtz's errors after his attention had been called to them and after he apparently had discarded them in the two quotations made above. But further study convinced me more fully that Helmholtz had perpetrated these three fundamental errors, and that LeConte had perpetuated them.

It is cruel to kill a pet with a point. The fatal point I present against the Muller horopter, the Figure 2 from LeConte, is that, if a rotation from A to B is attempted, one of two things must happen: Either the two nodal points will leave the circle, for they are in advance of the center of rotation; or the circle, moving to the left with the eyes, will leave both the first and second points of view. Take either horn of the dilemma, and the value of the circle is destroyed.

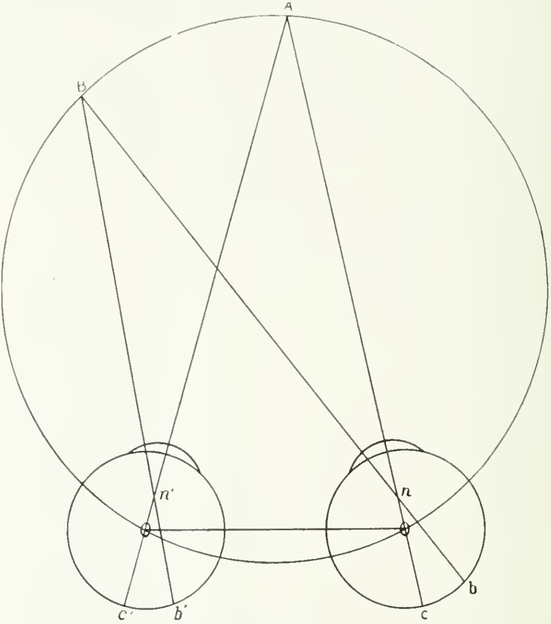

Figure 1.

Because binocular single vision and both monocular and binocular rotations could not be clearly understood, in the light of the teaching of Helmholtz and a host of his followers, I sought the more earnestly for the correct principles underlying them. These fundamental truths are: (1) The visual axis is the true antero-posterior or optic axis, the posterior pole being the central point of the macula; (2) all lines of vision intersect the visual axis at the center of retinal curvature, which is the center of rotation, and, like the visual axis, are radii of retinal curvature prolonged; (3) the cone at the posterior pole of one eye corresponds with the cone at the posterior pole of the other eye, for the reason that these have a common brain-cell connection in one cuneus; that all other corresponding retinal points are either rods or cones with a common brain-cell connection, either in the one or the other cuneus; that these corresponding points compose the corresponding retinal meridians, and that corresponding points are related, each to its own fovea, by degrees of arc and not by millimeters.

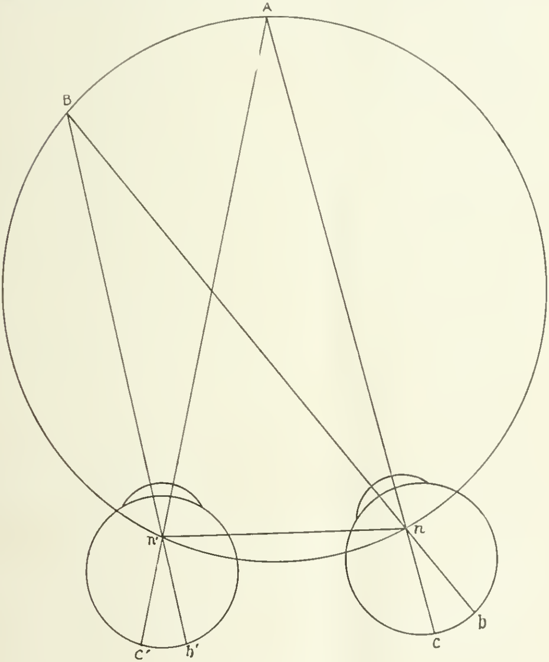

Figure 2.

The above fundamental truths are essential to a clear understanding of binocular single vision and of monocular and binocular rotations.

On the spherical concavity of the retina is founded the mental law of direction, which is : *"Every line of direction is a radius of retinal curvature prolonged."* The spherical concavity of the two retinas and the law of direction create the mathematical circles of possible binocular single vision. These circles are innumerable and must be divided into two classes. Belonging to the first class there is only one circle, the primary, but to the other class belong an infinite number of circles, the secondary. Each of the secondary circles has the same radius as that of the primary circle, and all of these are bisected by the extended median plane of the head. All of these circles have two points in common; that is, the centers of retinal curvature which are the centers of rotation of the eyes, but the third point through which each independent circle is constructed lies in the extended median plane of the head, each being the same distance from the center of the cord common to all (the line connecting the centers of the two eyes), as is the point of direct fixation on the primary circle. Each of these circles has its own plane, and all these planes intersect in the cord connecting the two centers of retinal curvature. In each of these planes lie innumerable lines of direction from each eye, one from one eye intersecting one from the other eye at every point on the circle. The angle of intersection for any two lines is precisely the same as the angle of intersection of any other two lines, for each is an inscribed angle and is measured by half of the same arc.

A point on any one of these circles is seen single with the two eyes only when the intersecting visual lines come from rods or cones in the two retinas which have a common connection with a single brain cell in one cuneus. These rods and cones constitute corresponding retinal points. Corresponding retinal points and the relationship of the vertical axes of the eyes to the median plane of the head do not create the isogonal circle. These become monoscopteric circles only when the two visual axes and the horizontal retinal meridians are made to lie in the plane of the primary circle with the visual axes converging at some point on this circle. With one visual axis in the plane of the primary circle and the other in the plane of a secondary circle, either below or above the primary plane, means diplopia everywhere. With the visual axes both lying in the plane of the primary circle, but intersecting within or beyond the circle, means diplopia everywhere. Let the planes of the horizontal retinal meridians fail to lie in the extended plane of the primary isogonal circle, the vertical axes of the eyes either diverging or converging above, can only mean diplopia everywhere,[1] but if the vertical axes should lean towards the right or towards the left, the same number of degrees, there would be no diplopia, but there would be loss of correct orientation.

The law of corresponding retinal points is supreme and imperious, as related to the isogonal circles, both the primary and secondary. The behests of this law are obeyed by the extrinsic ocular muscles, in the interest of binocular single vision and correct orientation. If the two visual axes are made to lie in the plane of the primary isogonal circle, when in its primary position, by watchfulness of the basal centers in control of the superior and inferior recti muscles, and are made to intersect at a point on this circle, at the intersection of the extended median plane of the head, by the action of the third conjugate center on the interni, aided, if necessary, by the basal centers connected with either the externi or interni, and if the horizontal retinal meridians are forced by the obliques to lie in the plane of the primary isogonal circle extended backward, then this isogonal circle is converted into a monoscopteric circle. As a result of this planing and converging of the visual axes, and the planing of the horizontal retinal meridians, every point on all the secondary isogonal circle is seen single; hence these circles all become monoscopteric. The sum of all of these points makes the monoscopteric surface, shown in this model.[2]

Every point in the field of binocular vision, not in the plane of the primary isogonal circle, lies in the plane of some secondary isogonal circle and also in the extended plane of some retinal meridian, either the vertical or an oblique meridian, and on the line of intersection of these two planes, which is the line of vision for that point. Any one of these points may become the secondary point of view, which means that the two eyes can be so rotated as to bring the two maculas under the two images of the secondary point. In doing this, the visual axes have simply taken the places of the two indirect visual lines which had connected the one point with its two retinal images.

The purposes to be accomplished by the twelve ocular muscles are: first, binocular single vision, with which all of them are concerned; second, range of vision, with which the lateral recti alone are concerned; third, extent of vision, with which all the recti and the obliques are concerned, and, fourth, correct orientation, with which the obliques are chiefly concerned. All of these purposes are accomplished in obedience to a law that governs both binocular rest and binocular motion. That this law may be understood there are three things that must be well in mind: first, the primary isogonal circle; second, the visual axes, and, third, the horizontal retinal meridians. To ignore the first is to fail to comprehend the import of the second and third; hence a knowledge of the primary isogonal circle (the old horopter) is supremely important. It must not be forgotten that to change the point of direct view is to create a new primary isogonal circle, and, since there is an infinite number of points in the line of intersection of the extended median and horizontal planes of the head, there can be an infinite number of primary isogonal circles, only one of which can have a real existence at one and the same time. They are all alike in that each is constructed through the centers of rotation (two fixed points) and the point of direct fixation (a variable point), and that they must lie in a common plane. Likewise in the extended plane of each secondary isogonal circle there may be constructed an infinite number of secondary circles, each differing from the other only in the length of its radius. Still another thing must be known; that is, there is no point in the binocular field that does not lie in either the plane of the primary isogonal circle or in the plane of one of the secondary isogonal circles. And still another fact must not be ignored: that is, the planes of all isogonal circles intersect in the line connecting the centers of rotation of the two eyes, which line is a cord common to all the circles. All of these things necessary for a proper understanding of the law of binocular rest and motion are easy of comprehension, but not easier than is the understanding of the law itself, in the light of these facts.

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[1] In non-symmetric oblique astigmatism the distortion of images compels convergence or divergence of the vertical axes, in the interest of binocular single vision, but at the expense of correct orientation.

[2] The surface exhibited in wood was that generated by revolving the primary circle up and down on the cord connecting the centers of the two eyes, as shown in Figure 3.

The following is the law of both binocular rest and motion:

THE OCULAR MUSCLES MUST SO RELATE THE TWO EYES THAT THE TWO VISUAL AXES AND THE TWO HORIZONTAL RETINAL MERIDIANS SHALL ALWAYS LIE IN THE PLANE OF THE PRIMARY ISOGONAL CIRCLE, AND THAT THE TWO VISUAL AXES SHALL INTERSECT AT SOME POINT ON THIS CIRCLE, IN THE INTEREST OF BOTH BINOCULAR SINGLE VISION AND CORRECT ORIENTATION.

That the above law may be obeyed, every rotation plane must be a meridional plane extended, and the equatorial plane must contain the axis of every rotation. A study of Figure 3 will show that, in direct rotations to the right or left, the plane of the primary circle is not moved, but the visual axes are shifted with unvarying angle in this plane from point to point as from C to A. It will also be seen that in passing from the primary point of view (C) to a point directly above (C′) or below, on a secondary circle, the primary plane (B-C-D) is made to take the place of the secondary plane (B-C′-D), but the visual axes have not been shifted in it. While unmoved in the plane of the primary circle throughout the rotation of the latter, each axis has moved in the extended plane of its own

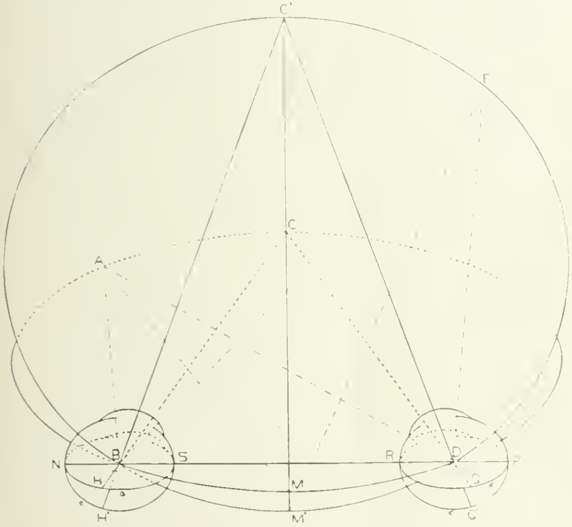

Figure 3.

vertical meridian from the primary to the cardinal secondary point of view, the angle of convergence unvarying.

Again, Figure 3 shows that, when fixation is to be changed from the primary to an oblique secondary point (from C to E), the plane of the primary circle B-C-D is made to take the place of the plane of the secondary circle B-C′-D, and the visual axes H-C and G-C are made to assume the positions of the indirect visual lines E-e and E-e′. During the rotation of the primary plane neither the visual axes nor the horizontal retinal meridians have been allowed to leave it, but both have been shifted in it, each visual axis moving in the plane of that retinal meridian extended in which were located the point and its image before the rotation began.

H, the image of C, is on the macula, at the point of intersection of the vertical and horizontal retinal meridians, while C is on the line of intersection of the extended planes of these meridians. But since the plane of the primary isogonal circle and that of the horizontal retinal meridian coincide, it is easily shown that every object in the binocular field of vision and its retinal image are on the line of intersection of some one isogonal plane and the plane of some one retinal meridian; therefore, the object in the spacial concave occupies the same relationship, in degrees, to the vertical and horizontal retinal meridians extended, as its retinal image in the retinal concave does to these meridians. The line connecting the two is the line of intersection of the extended plane of the retinal meridian on which the image lies and the plane of the isogonal circle on which the spacial point lies. Since the plane of every isogonal circle as well as the plane of every retinal meridian passes through the center of rotation, their lines of intersection, which are lines of direction, must all pass through the center of rotation. This is another proof that every line of direction is a radius of retinal curvature prolonged.

It only remains now for me to show that every member of my large family of cortical and basal brain centers is real and not imaginary. This I can do by a further study of Figure 3. In this figure, C is the direct point of fixation on the circle B-C-D. In both intrinsic and pseudo-esophoria, the visual axes would tend to cross at some point within the circle, but this too early crossing is prevented by neuricity sent from some center or centers in the brain to the two externi. Since there is no divergence voluntary center in control of the two externi, each of these muscles must be controlled by an individual involuntary center at the base of the brain, these are the right and left fourth basal centers, duction centers for the externi and under control of the fusion faculty of the mind. These two centers send just enough neuricity to their respective externi to compel intersection of the visual axes at C.

Again, if there is exophoria, the visual axes would tend to cross at some point beyond C, but the intersection beyond the chosen point of view is prevented by the two basal fusion centers for the two interni, these fusion centers, the right and left third basal centers, supplementing the neuricity from the third conjugate or convergence center so as to force intersection of the visual axes at C.

If the point of fixation of the visual axes of esophoric eyes is to be changed from C to A, on the same circle, three brain centers, two of them conjugate and one basal, must participate. Convergence at the same angle must be maintained by the third conjugate center, and the visual axes must be moved to the left by the left externus and the right internus, these being stimulated to do so, in part, by neuricity from the fifth conjugate center, but in part also by neuricity from the left fourth basal center to the left externus. One of the three muscles concerned, namely, the left internus, in this changing of the points of view, is under a single stimulus, the source being the third conjugate center. The right internus receives an equal convergence stimulus, but it also receives neuricity from the fifth conjugate center, the purpose of which is to rotate the right eye directly to the left. The left externus also receives neuricity from a double source, the one source being the fifth conjugate center, the other source being the left fourth basal center. Except for the supplemental neuricity from the left fourth basal center, the left visual axis would not move so fast as the right; hence they could not reach A at the same time, nor could the same angle of convergence be maintained throughout the rotation. It can not be denied that a weak muscle must have more neuricity than a strong muscle for the accomplishment of a given work. A conjugate center gives equal quantities of neuricity to the two muscles under its control; hence if one of a pair is weaker than the other, there must be an individual fusion center for the weaker muscle, from which must come the supplemental neuricity.

In the next place, granting that there is lateral orthophoria, there is a need for individual basal fusion centers in all cases of hyperphoria. Let there be left hyperphoria and right cataphoria, of each 5°, with C as the point to be fixed. The interni are ready to respond perfectly to neuricity from a single center, the third conjugate. Tonicity of the superior and inferior recti of the left eye would place its visual axis in the plane of a secondary isogonal circle elevated 5° above the plane of the primary circle; the tonicity of the superior and inferior recti of the right eye would place its visual axis in the plane of a secondary isogonal circle 5° below the primary plane. Diplopia must follow without intervention of nerve force, and whence comes this force? Not from the first conjugate center, for this would elevate both eyes. Not from the second conjugate center, for this would depress both eyes. In neither case would the two axes be placed in the primary plane. To prevent diplopia the right first basal center must send neuricity to the weak superior rectus and thus make it elevate the visual axis into the primary plane; and the left second basal center must send neuricity to the weak inferior rectus and thus make it depress its visual axis into the primary plane. Thus the visual axes are brought into the plane of the primary isogonal circle by the two basal fusion centers, allowing the third conjugate center to converge them at C, with binocular single vision as a result.

In every possible binocular rotation the ocular muscles have one common task to perform, namely, the keeping of the two visual axes and the two horizontal retinal meridians in the plane of the primary isogonal circle, and the converging of these axes on some point on this circle, thus making of the single primary isogonal circle and the infinite number of secondary isogonal circles, all monoscopteric circles, or circles of binocular single vision.

The centers concerned in any rotation of any pair of eyes whether these eyes be orthophoric or heterophoric, can be known, and the work done by these centers can be understood by any oculist who sets himself to the task. It would be a pleasure to me to point them out, but this paper has already grown too long.

The aim of the treatment of all heterophorias is to give equal tonicity to the two muscles of every pair so that the basal or fusion centers may have no abnormal work to do in planing the visual axes and horizontal retinal meridians and in shifting and converging the visual axes at a point on the primary isogonal circle.

Listing's plane and law, Helmholtz's poles, law of direction and nodal point, Muller's horopter, and the multitude of errors growing out of these must be forgotten or ignored if one is to have any accurate knowledge of ocular rotations. The same is true if one wishes to know how to detect and deal with heterophoric conditions

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SOME EXPERIENCE WITH SIMPLE GLAUCOMA AND CONCLUSIONS THEREFROM ON THE RELATIVE VALUE OF OPERATIVE AND NON-OPERATIVE TREATMENT.*

H. B. Young, A.M., M.D.
BURLINGTON, IOWA.

Whether the operative treatment of non-inflammatory, or simple glaucoma, is to be considered the *sine qua non* that it is in the inflammatory type is, I take it, a question that will not fail of discussion so long as three questions precedent remain unanswered. These three questions are:

1. What is the pathology of glaucoma?

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* Read before the American Academy of Ophthalmology and Oto-Laryngology, Louisville, Ky., Sept. 27, 1907.

2. How shall we distinguish non-inflammatory from inflammatory glaucoma?

3. What is the measure of relief attainable in this disease by either mode of treatment?

On the first of these I have nothing to offer. On the other two I wish briefly to present some views acquired by experience and study of the reports made by others. I do not pretend to say that my experience has been unusual or extensive—just the average, I fancy, of the environment—but it has been sufficient to bring me into practical touch with all the perplexities of the situation, and not the least of these has been the realization that my patients sometimes go, or have gone, to colleagues who entertain classification and therapeutic beliefs not in harmony with my own—a most prolific source, as all must admit, of mutual embarrassment and probable harm to the patient. It is because of this more than anything else that I am led to again ask your consideration of this subject.

HOW SHALL WE DISTINGUISH NON-INFLAMMATORY OR SIMPLE GLAUCOMA FROM INFLAMMATORY GLAUCOMA?

A review of the literature, particularly that of the text-books, will very quickly uncover the fact that with most writers chronic glaucoma and simple glaucoma stand alike for non-inflammatory glaucoma—are interchangeable, if not, indeed, synonymous terms. The difficulty, in some cases, of differential diagnosis between simple glaucoma and optic nerve atrophy is always mentioned; likewise the slowly increasing dimness of vision without other disturbing symptoms. Tension may be increased moderately or not at all, and the pupil may or may not be dilated and sluggish. In short, it is atypical glaucoma as compared with inflammatory or congestive glaucoma, "inflammatory or congestive" relating to the great or moderate injection of the scleral vessels.

Under such description the following case, of which you have all seen the duplicate, could be classed as non-inflammatory glaucoma:

Mrs. N. M., aged 62, first seen May, 1906, comes for cataract operation, which an "eye specialist" said would restore her sight when blindness was complete; L. E. weak for years, very little vision the past two years. R. E. began to fail four months or more ago; never any pain or inflammation in either; vision just smoky, and the lamp sometimes has colors around it.

St. pr.; the L. E. has T. + 2 and p. l. in a very small area of the extreme temple field. The cornea is bright. The pupil measures 4 mm., is sluggish, and the anterior chamber very shallow. The lens is too opaque for a view of the fundus.

The R. E. has T. + and 20/50 V., with 2 D. H. corrected. The

F. V. can not be accurately mapped because of the patient's extreme nervousness, but shows no gross defect. The pupil measures 4 mm., is sluggish and the anterior chamber shallow. The nerve is dusky, with uneven margins, but not characteristically cupped.

I saw this patient at regular intervals until November, 1906. During all these months the systematic instillation of pilocarpin. plus a general hygienic regimen, held the conditions in *statu quo* and gave better use of the eye. To the patient my tentative treatment seemed all sufficient and my talk of operation a needless harm.

But judged by the standard set up years ago by Schweigger, that "a dilated sluggish pupil and shallow anterior chamber precluded the diagnosis of simple glaucoma, meant, on the contrary, inflammatory glaucoma, dormant perhaps, but still inflammatory glaucoma," or Abadie's declaration, that simple glaucoma was glaucoma of the posterior segment of the globe, while glaucoma of the anterior segment was inflammatory glaucoma, this case was really one of inflammatory glaucoma, and such it proved to be.

About December 1 she got infective "sore throat" epidemic in that locality. There was bowel derangement and fever for two days; then the R. E. became inflamed and painful and V. sank to qual. p. l. When I saw her, three days later, the crisis had passed, but there was T. + 2, the cornea was steamy and V. only 10/150. Iridectomy (and it was most difficult to accomplish) fortunately reduced T. to normal and restored the 20/50 V., which is still maintained, although there is bitter complaint of light reflections and there is now only 1 D. H. The L. E. has remained quiet, but 1 p. has been lost.

Cases of inflammatory glaucoma which have very short prodromals and about which there is no question of diagnosis are scarcely more common than this variety, but in the few I have seen with normal pupils (and I wonder if anybody has seen many such) I have never seen inflammation and rapid loss of vision, and one which I will presently report I have had under observation for twelve years. Schweigger's distinction, therefore, although it seems to have received little notice, appeals to me as logical in every way. With such a distinction we could be rid of the confusion arising from the indefinite use of the word "chronic." It is superfluous in non-inflammatory or simple glaucoma, which is always chronic or slow, and such cases as the one reported could have it properly attached as indicating that form of inflammatory glaucoma. If we could have an agreement upon this as we have upon the prism measurement of muscular dynamics, it would, regardless of what pathology shall eventually tell us, be a step toward a ground of understanding among ourselves which we seem not now to possess.

WHAT IS THE MEASURE OF RELIEF ATTAINABLE, ETC.?

The most recent systematic utterances in this connection are probably those of Posey and Risley before the Ophthalmic Section of the American Medical Association in 1906 and 1907, respectively.

The measure of relief by non-operative means seems to be fairly stated by Posey. The disease was held largely in abeyance in a considerable number of cases for long periods of years by a certain use of miotics.

The measure of relief by operative means was represented by Risley (who cited 7 cases with 7 eyes saved out of 12 operated) as curative, and as to numbers, provided it was done early, largely in excess of previous estimates: notably those of Berry, a strenuous advocate of operation, who accepts Horner's statistics (1882) showing less than 1/3 as many improved and three times the loss when compared with the same in inflammatory glaucoma.

That the evidence submitted failed of being wholly conclusive is manifest from the remarks of those who took part in the discussions; but to my mind the feeling of uncertainty which prevailed might have been dissipated if the point had been raised that part of the evidence was not germain to the issue. Suppose, for example, that I had operated before the inflammatory outbreak in the case I have reported, or in another just like it that I operated twelve years ago, seen recently and retaining the restored 20/30 V., without farther limitation of the field and the blind eye never having given any trouble!

To include these, as might in that event have been done, in the list of cured non-inflammatory cases would certainly be misleading, and yet cases not so unlike these were here quoted. In the 14 eyes involved the dilated pupil and shallow anterior chamber was recorded in 7 (not described in 7); the steamy cornea in 2; tortuous scleral vessels in 1, and pain in 9. These conditions were variously distributed, but in the 14 only two escaped this record entirely. The 60 per cent. relieved is also so near the record for inflammatory glaucoma that confirmation may be had of previous doubts.

However, in Hasket Derby's case, reported by Cheney, we find a better compliance with the Schweigger standard, and it is interesting to note that in this case, listed as "improved," the 5/24 V. "fell off immediately after operation, to recover only slowly and partially"; 3/25 after two years: the same after twelve years; then a slow retrograde but something left after twenty-four years. To compare with this I will report the case I have referred to:

Mrs. M. M., aged 60; first seen May, 1895. She discovered eleven years ago a "V-shaped" blind spot in and down in the L. E. This gradually spread until she had only qual. p. l. up and out in that eye. It has been better rather than worse the past year. But during this time a cloud has come over the R. E. There has never been any pain or inflammation in either. She wears + 3 sph. for distance, + 6 sph. for near.

St. pr. (1895): V. O. D. is 20/70 + and O. S. fingers at one foot up and out. Tension is normal (?) in both, scleræ white, corneæ bright, pupils 3 mm., anterior chamber normal (?), the left disc dusky and fairly cupped, the right cupped but not so markedly, and the nasal field limited 20° in the median line (more below). She is otherwise in good condition, mentally as well as physically, anxious, of course, but calm.

After canvassing with her the prospects by the two methods of treatment, pilocarpin was ordered, although I regret to say not so actively as Posey advises. Three years later (1898) the conditions were: V. O. D. 20/100, the nasal field a little more defective and the nerve more plainly cupped. O. S. unchanged. About this time she visited in New York and consulted Dr. Knapp, who confirmed my diagnosis of simple glaucoma, advised more pilocarpin and watchfulness for the possible need of operation. Five years later (1903) V. O. D. was 10/200 with well-marked cup, and O. S. qual. p. l. with deep blue-green cup. When I again spoke of operating she said she could still with a loup see the writing on her business papers when held close, and, as the rate of decline was slow, she figured that the chance for useful vision for her life expectation was too great to take even a moderate risk by operation. Two years later (1905) I was called in haste to see her, the message being "a sudden great loss of vision." I found her with qual. p. l. only, but no apparent change in the conditions otherwise. The breath had a foul odor and there was loss of appetite with constipation; so it occurred to me that there might be coincident toxic amblyopia of intestinal origin. Calomel and salines were ordered, and the former vision was promptly restored.

St. pr. (Aug. 31, 1907): Central vision is practically abolished and she has annoying subjective images, either landscapes without the green of the foliage or cloth designs in which red and green predominate. Temporal vision in the right still enables her to get about quite well, and the left still has qual. p. l. Tension and pupils are unchanged. She has for the past year neglected the pilocarpin, but will resume it.

What her vision might have been now if she had persisted with the pilocarpin is, of course, pure speculation (ditto by operation), but it seems not too much to assume that with useful vision after twelve years of indifferent treatment a better standard might have been maintained by consistent medication; nor is it too much to assume that so long as we can see cases like this—that go twenty-three years without total blindness or disturbance of the anterior segment—one may properly doubt the possibility of change to the other category which some claim is the end of all glaucomas. Moreover, the argument devised to show that tension is always the underlying cause of nerve destruction is capable of different interpretation, for a tension that is doubtful to the educated touch, but still too great for the nerve to safely bear, should first indicate a nerve too far from normal to bear ordinary pressure; in other words, a posterior disease process, and until we know glaucoma to be a disease entity of the globe rather than a "syndrome," as Wilder suggests, a glaucoma posterior.

Taking, then, the result in Derby's case as typical of the measure of relief by the operative method, a fair estimate because it is in harmony with the earlier experience, and the result in Posey's case, supplemented by my own as typical of the same by the non-operative method, it would seem that the prospects are more for palliation than for cure either way, and the relative value of the two methods becomes a matter of computation between the *risks* of sudden total loss, postoperative cataract (one of my patients got this, and extraction was subsequently a failure through iridocyclitis) or "dazzlings," and *chances*, remote, for permanent relief and, average, for a longer lease on vision. The balance may be in favor of the operative method, but it is surely not great enough to warrant criticism of the colleague who says to his patient: "Take your choice."

Per contra, although it is not strictly within the purview of the title, the balance is overwhelmingly in favor of the operative method in those cases showing either the dilated sluggish pupil with shallow anterior chamber, steamy cornea, pain, or rapid loss of vision, no matter how free from inflammation they may seem to be. But these under the premises should not be mistaken for non-inflammatory or simple glaucoma.

BLINDNESS FOLLOWING THE INJECTION OF PROTARGOL IN LACRIMAL SAC.

F. PARK LEWIS, M.D.

BUFFALO, N. Y.

While the condition about to be described is exceedingly unusual, the possible danger which may follow an injection in the lacrimal sac should not be overlooked, and for that reason this case is reported.

The patient, a woman of 50, stout, having flabby tissues and not a high degree of physical resistance, had suffered for some years from dacryocystitis. When she was first seen by the writer, the tissues around the eye were greatly swollen—an abscess had broken on the face and a fistulous opening yet remained through which pus discharged from the sac. Under the usual treatment the swelling decreased so that within a week or ten days probing could be successfully accomplished. The sac, however, continued to discharge freely and it was washed out with a 25 per cent. solution of protargol. No reaction followed, and the second day the same procedure was followed. About 1 c.c. of the solution was employed, when it was noticed that the swelling, which had not wholly disappeared, had slightly increased. As there was no discomfort, the patient was allowed to return to her home, thirty miles distant. The second day after, word was received by telephone that great pain had developed shortly after her leaving the office, that it had not then disappeared, and that the eye had become blind.

The patient was directed to return to the city immediately, when it was found that there was slight proptosis, a moderate degree of swelling of the orbital cellular tissue, soreness and pain, with difficulty in moving the eye. The pupil was dilated and immobile. There was no light perception. The retinal vessels were slightly congested and the disc markedly reddened.

It was evident that the ruptured sac had allowed a percolation of the protargol into the orbital tissues, intensifying a cellulitis which already existed and involving the optic nerve either by extension of the inflammation or by constriction from pressure. Gradually the soreness and swelling disappeared when the papillitis gave place to atrophy. While the tissues were still somewhat swollen, Dr. A. A. Hubbell of Buffalo and Professor O. Haab of Zurich, who was visiting this country as the guest of the American Medical Association and who happened to be in the city, called upon the writer when the patient was shown to them. To each of them the experience was unique. On Professor Haab's suggestion a free incision was made with a Graefe knife deep in the orbit under the eyeball, with the hope of allowing any fluid that might have accumulated to escape. None came away, however. The inflammatory symptoms gradually disappeared, but leaving the eye perfectly blind. Five years after the accident the optic disc is still blanched and light perception is absent. The eye in every other respect is normal.

The case is reported for the purpose of illustrating the possible danger of strong or irritating injections in a sac in which a rupture allows a possible involvement of orbital tissues and the necessity of exercising extraordinary care under such circumstances.

Correspondence.

VERNAL CONJUNCTIVITIS.

CHICAGO, Nov. 20, 1907.

To the Editor:—In the November, 1907, number of THE OPHTHALMIC RECORD, I find an excellent article by Dr. Fox, of Philadelphia, on the radical cure of vernal conjunctivitis. Dr. Fox does me the honor to quote from an article which I wrote in 1901 for the *Northwestern Lancet*, in which I said: "I now beg to apologetically attract your attention to the treatment of this discouraging disease, for up to the present time no one has had sufficient temerity to claim the discovery of a cure." Since then, however, I have found that amputation of the growths, supplemented by careful and vigorous use of the x-ray, will effect a perfect and complete cure; at least I have found this to be true in one case, which I am both glad and sorry to say is the only case of this disease which I have seen for five years. I, therefore, have not had an opportunity of personally testing this treatment upon other cases. This case was reported in THE OPHTHALMIC RECORD, October, 1903, and re-reported several times later, as time progressed, in the same periodical, and I presume escaped Dr. Fox's attention in looking over the literature of the disease. The patient was a young lady from Kentucky, who had well-marked palpebral vernal conjunctivitis for several years, for which she had been treated by several of the best ophthalmologists in Europe and America. The diagnosis was unquestioned and her sufferings were intense when she consulted me. She had been seen from time to time by Drs. W. A. Pusey, Casey A. Wood, Thomas A. Woodruff and Paul Guilford. Her growths were removed by the knife, scissors and curette and she was then placed under the care of Dr. W. A. Pusey for x-ray treatment. She received in all, I think, about 75 or 80 treatments, and these treatments occurred during the hottest weeks of summer. The growths entirely disappeared, as did also all her unpleasant symptoms, and she has remained absolutely cured up to the present time. I had the pleasure of seeing her not more than two weeks ago, and her lids looked absolutely normal in every respect. This case had been previously treated, by amputation, etc. (without the x-ray) with absolutely no beneficial result.

Dr. Casey Wood has also had under his care a similar case which he has treated in the same way with the same results, and I understand from an article written, I think, by Dr. Oram Ring, of Philadelphia, that this method of treating vernal conjunctivitis is gaining in favor wherever tried. Cordially yours,

FRANK ALLPORT.

Reports of Societies.

MEETING OF THE OPHTHALMIC SECTION, ST. LOUIS MEDICAL SOCIETY.

Meeting held May 8, 1907.

DR. BARCK, Chairman, Presiding.

Presentation of patients:

Glaucoma Secondary to Injury.

Dr. H. Muetze. A brakeman, 23 years old, came under observation Feb. 28, 1906, with the following history: On March 4, 1905, he had sustained an almost central perforating wound of the cornea by the bursting of a water-glass. After healing, vision was sufficient to enable him to observe large objects, but gradually grew worse, and the eye became "blood-shot." Examination showed the eyeball uniformly enlarged; marked pericorneal injection; a large, almost central leucoma of the cornea, with adherent iris and pupil widely dilated. Tension plus 1; V. = movement of hand at six inches. The ophthalmoscope revealed atrophy of the optic nerve. The patient was placed on potassium iodid and mercury internally, with instillations of pilocarpin and eserin. The pupil contracted well, the tension became lower, and the congestion diminished. Against advice, the patient returned to work. May 1, 1907, he returned with all the previous signs greatly exaggerated. Vision was completely abolished. It is worthy of note that the patient has never had any pain in the eye or the right side of the head except a momentary twinge in the right temple several days ago.

Exophthalmic Paresis of External Rectus.

Dr. J. C. Buckwalter. Female, 63 years of age, came under observation a year ago. The complaints were of impaired vision, transient diplopia, drooping of the upper lid, and pain. All these symptoms cleared up and she passed from observation. Eight weeks ago she again consulted me, at which time I found moderate exophthalmos and slight convergent squint; vision normal. With her glasses she reads 20/20 and No. 2 Jaeger. Urine negative. Ophthalmoscopic examination negative.

Case of Cataract and Chorioidal Coloboma (?).

Dr. J. E. Jennings. This young man, when a boy of 5, was struck in the right eye, sustaining injury of the iris and lens. We see now, as the result, a slight circumscribed opacity of the lens.

With the ophthalmoscope we find peripherally a large patch of what appears to be a coloboma. Just what connection this wound of the lens has with the coloboma it is difficult to say. It may be due to the injury, but, if so, is unusual, considering the transparency of the lens.

Dressings after Intraocular Operations.

Dr. C. Barck read a paper entitled "Dressings After Intraocular Operations." Whilst the roller bandage, introduced by Graefe, remained the standard dressing for nearly half a century, within the last twenty years a number of new methods have been recommended and tried. These can be classified under three categories, which the author terms the "strip," the "free" and the "open" methods, respectively. In the first, the lids are covered with a strip of isinglass plaster only; in the second, the lids are free, but the eye is protected from injury by some kind of a shield or mask; in the third, the eye is left open without any protection whatever. The paper discusses at length the advantages and disadvantages of the bandage, and of the three new methods, and arrives at the following conclusions: The idea of restricting the motions of the eye by the bandage is erroneous; this rather interferes with the quick and regular closure of the wound. A gentle closure of the lids is beneficial; it does not, as maintained by some, interfere with the regular flow of the tears, and increase thereby the danger of secondary infection. Furthermore, protection of the operated organ against gross insults is a surgical demand. The author, therefore, rejects the bandage (with exceptions, of course), and rejects the strip and the open methods. For final selection, he discusses the free method (as practiced now frequently in Europe), and a combination of the free and strip methods, and finally decides in favor of the latter. "The lids are covered with a thin layer of gauze and cotton, or cotton alone, which is held by a strip of adhesive plaster running from the forehead to the cheek. Over this is placed a shield, which is held by a strip running from the nose to the temple. At the dressings, only the upper parts of the plaster are detached and are afterwards reapplied." As a shield he prefers an aluminum shield, as shown, to the Fuchs wire mask.

DISCUSSION.

Dr. Buckwalter stated that after cataract operations he smears sterilized vaselin over the lids, then places a piece of sterilized gauze, over this a piece of cotton, and plasters the cotton down with collodion.

Dr. Williamson spoke of the advantages of the double wire mask of Fuchs, which covers both eyes and fits well down over the cheek and nose, thus offering a better protection during the postoperative treatment than the aluminum mask of Dr. Barck.

Dr. Alt stated that he does not use any mask, but ties a ribbon to one hand of the patient, passing it under the back and tying it to the other hand, so that any attempt during sleep to raise the hands to the eye inevitably wakens the patient.

Dr. Saxl discussed various methods of dressing obtaining in the clinics of Vienna, Wurtemburg, Zurich, Basle and Paris.

Dr. Green called attention to the advantages of the Ring mask, dwelling especially on the possibility of shaping it to the contour of the patient's face, and to the use of adhesive strips across the forehead, holding it more securely in position.

Notes on the Bacteriology of Conjunctival Inflammations.

Dr. W. H. Luedde. The writer emphasizes the desirability of frequent and regular examinations to determine the bacteriological causes present in the various types of inflammatory diseases of the conjunctiva and cornea. Reference was made to methods in vogue at the Fondation Ophthalmologique de Rothschild at Paris. Tables presented showed the Weeks bacillus present in 71 cases out of 226 cases diagnosticated as acute conjunctivitis, but only three times in 265 cases of "chronic" conjunctivitis.

The diplobacillus of Morax-Axenfeld was present only 24 times in 226 "acute," but 102 times (or in 38½ per cent.) in 265 "chronic" cases examined at Paris.

In a smaller number of examinations made in St. Louis, in private practice, the bacillus of Weeks was present in 11 per cent. of the acute cases and not found at all in the chronic cases. The diplobacillus of Morax-Axenfeld was found in 22 per cent. of the acute and in 30 per cent. of the chronic cases. The value of the examination of "smears," easily and rapidly made, was insisted on as being a thing very much worth while, even for the busy practitioner.

JOHN GREEN, JR., M.D., Secretary.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of Oct. 14, 1907.

DR. F. C. HOTZ, Presiding.

Septicopyemic Metastasis in Two Eyes of the Same Patient.

Dr. Geo. F. Suker reported the case of a young woman who developed septicemia following an induced abortion. Both eyes became infected, necessitating their removal. The left eye was first affected. The conjunctiva was very much swollen and the anterior chamber was filled with pus. There was complete loss of vision. Vision in the right eye was impaired, but the patient could count fingers at any distance. The left eye was eviscerated and the scleral cavity was packed with gauze, with the expectation of later implanting a glass sphere or of enucleating the stump and doing an Adams-Frost operation.

The media in the right eye were clear; the nerve head was somewhat edematous; cornea clear, but on the evening of the same day the vitreous and anterior chambers were filled with pus and woman was completely blind. Under local hot applications and saline injections the eye quieted down, leaving an inferior staphyloma of the chorioid and sclera which finally subsided. The eyeball was quiet; the cornea cleared up and the anterior chamber became free from pus. The lens was cataractous. The iris was bound down by adhesions. A secondary iridocyclitis set in and phthisis bulbi ensued. The eye had to be enucleated. A bacteriologic examination proved this to be a streptococcus infection. The bacteria were obtained from every section of the eye. The woman is alive and well.

A decalcified bone sphere was implanted in the capsule of the second eye, removed first, and the cosmetic result is an excellent one. This is the fourth or fifth case where a patient survived a septicopyemia and the only case where a double enucleation was performed and the patient still being alive and well.

DISCUSSION.

Dr. F. C. Hotz has seen two cases of such infection following puerperal fever. In both cases the patient recovered. The eyes were affected and suppuration of the globes occurred, destroying the eyes.

Dr. Brown Pusey asked whether the retinas were involved.

Dr. Suker replied that both the retina and chorioid were involved. The patient was in the hospital for about eight weeks and her temperature curve was characteristic of septicemia. At times the patient became maniacal. She developed one abscess after another, which had to be opened, the last abscess being a lacteal abscess. From the pus a pure culture of a very virulent streptococcus was obtained—long chains of a large coccus.

Dr. A. T. Horn stated that the patient was 27 years old, with one miscarriage. She had had amenorrhea for two months and about ten days before she was seen by Dr. Horn she had a gush of blood and after that a sanguineous discharge. Her pulse was 120; temperature, 104 degrees. There was much tenderness in the region of the uterus and tubes. On the evening of the same day the pulse was 138; temperature, 105 degrees. Under anesthesia the uterus was dilated and curetted of clots and shreds of membranes. An intrauterine douche of permanganate was given and the uterine cavity packed with gauze. The temperature dropped to 103.5 degrees, pulse 130. The following morning the pulse was 102, temperature 99 degrees. Attempt at abortion was denied and no fetus was found. The substances removed from the uterus proved to be secundines.

A Case of Albuminuric Retinitis in a Young Patient.

Dr. Mortimer Frank reported the case of a girl, aged 18 years, who was first seen by her family physician in July, 1906, when she had dropsy of the feet and face. In September of this year there was still 5 per cent. of albumin in the urine. The disease was progressive and a diagnosis was made of chronic Bright's disease. In October, 1906, the patient complained of her vision, but no examination was made of the eyes. At that time the patient weighed 165 pounds from the dropsical accumulation. On the last Sunday in December, 1906, she had uremic convulsion and there was complete anuria. She remained unconscious for 48 hours, then rallied and improved slowly.

In January, 1907, she could only count fingers at one foot. In June, 1907, when Dr. Frank first saw the patient, the vision in the right eye was 6/12 plus; in the left eye, hand movements. Under homatropin-cocain, right eye was 6/9 plus 1 with correction, on plus 0.75 ○ plus 1.00 x 90; in the left eye there was no improvement. The fundus was typical of an albuminuric retinitis. Vision gradually improved and in August, 1907, with glasses, she read 6/6—1, and in September, 1907, 6/6 plus, and on Oct. 8, 1907, when last seen, vision equalled 6/5. No improvement in left eye.

Report of a Case of Double Conical Cornea.

Dr. F. C. Hotz had a young girl under observation for several years for conical corneæ. In April, 1905, she was 13 years old, a slim, delicate, poorly developed girl. Her parents had noticed for several years that her sight was imperfect. Examination showed in the right eye a slight conical cornea, with nothing abnormal in the fundus. Vision was 20/400; no improvement with a combination of glasses. The left eye could only perceive the movements of the hand. The cone of the cornea was marked. Under atropin, on April 22, a minus 2 with minus 3 cylinder, axis 180, got vision of right eye to 20/70. Atropin was continued for a month, and examination on May 27, 1905, showed right eye minus 1 with 1 cylinder, axis 180, vision 20/50. Left eye gave 6/50 minus 200. In July the same result was obtained. In January, 1906, the vision in the right eye was 20/70 without glasses and with a plus 3 cylinder, axis 180, 20/40. In March, 1907, with plus 5 cylinder, axis 180, vision was 20/30, and in October the condition was the same, plus 5 cylinder gave 20/40 vision. The left eye still shows a conical cornea, but in the center of the right eye there is a little speck, but no cone of the cornea. The remarkable feature is, the myopia in the vertical meridian has changed to such a marked hyperopia.

DR. MORTIMER FRANK, Secretary.

PENNSYLVANIA STATE MEDICAL SOCIETY, SECTION ON OPHTHALMOLOGY.

Meeting, held at Reading, Pa., September, 1907.

The meeting was called to order at the hour named by the President, Dr. Lewis H. Taylor, of Wilkesbarre, who welcomed the members to the opening session of the Section on Specialties.

The scientific business consisted of four papers, constituting a

Symposium on Headache.

They were as follows:

1. The Relation of Headache to Affections of the Eye.

By Dr. Samuel D. Risley, Philadelphia. Dr. Risley considered that in any careful study of headache from the point of view of the oculist, the following conclusions seem forcibly demonstrated by experience: 1. That abnormalities of the ocular apparatus are, in a large group of patients, the sole and sufficient cause of headache. 2. That these anomalous conditions may be the unsuspected cause. 3. That the sudden or recent development of headache during or after middle life, after attacks of acute disease, or during the ravages of some general dyscrasia, does not exclude the eyes as an etiologic factor. 4. That the participation of the eyes as a probable cause of headache and of a considerable group of associated symptoms can be positively excluded only in the proved absence of ocular disease, or after the most painstaking correction of any existing error of refraction or abnormality of binocular balance. 5. That in many cases, prolonged eye-strain sets up pathologic symptoms in the fundus oculi, which requires, like other inflamed tissues, time for recovery after the removal of the cause; therefore, that immediate relief of symptoms is not always to be expected. 6. That the existence of some general affection does not exclude the eyes as the immediate cause of an associated headache; since the accompanying ocular disease may be the direct cause of the pain in the head, to relieve which local treatment also will be required. 7. That the existence of congenital ocular defects is especially prone to be the occasion of headache and of other reflex neuroses in individuals with impaired vitality.

2. Headache from a Neurologic Standpoint.

By Dr. Edward E. Mayer, Pittsburg. Dr. Mayer considered the difficulties in making distinctions between headaches and paresthesiæ; the value of the locality and extension of head-pains in diagnosis; the factors of toxemia, stress and exhaustion in evoking headaches, and the effort of adjustment of function, and what it signifies. He said that a biologic explanation, rather than a pathologic one, is necessary in many types of headache. He then considered the value of headache as a symptom of brain involvement in middle-ear disease, and took up the question as to whether headache means anything in suspected meningitis.

The symptoms-complex simulating organic disease in which headache is prominent as a factor next received consideration, and the value of headache as a symptom in actual brain diseases.

3. Headache due to General Diseases.

By Dr. James C. Wilson, Philadelphia. Headache, according to Dr. Wilson, is not a disease, but a symptom, whose significance varies according to the nature of the primary affection. It may be circulatory (anemic or congestive), mechanical, toxic or infectious; essential or accidental, and transient or persistent. He then considered general and special forms of headache that occur in constitutional affections; their clinical importance, and their differential diagnosis, prognosis and treatment.

4. Headache due to Disease of the Accessory Sinuses.

By Dr. B. Alexander Randall, Philadelphia. Dr. Randall said that the former association of ophthalmic and aural surgery had its justification in the frequency of disease of the nose and its accessory cavities, giving rise to affections of both eye and ear. Laryngology has made fair claim to this field for only a decade, frontal, ethmoidal and lacrimal conditions having been left almost wholly to the oculist. The latter was sometimes over-zealous in ascribing headache to eye-strain from refractive defect or muscular anomaly; but Harrison Allen, Ziem of Dantzig, Gruenlug, Ewing and others have given valuable reminders of the need of rhinological study. Only the serious lesions, empyema, caries, osteoma and other new growths formerly concerned us, said Dr. Randall; now we must consider minor inflammations and even vasomotor disturbances of this tract. Neuroretinitis, ocular palsies and orbital phlegmons must not be required to rouse us to appreciate the influence of nasal lesions; but our primary examination should include a search for such, and any failure of our ocular measures to relieve headaches promptly should demand exhaustive study of the nose and its accessory cavities.

DISCUSSION.

Dr. Charles K. Mills, Philadelphia, spoke particularly upon Dr. Risley's paper. He said that the specialist is often misled by too close an attention to his own specialty in dealing with the patient, and stated that his experience has been that ocular defects are rarely the sole cause of severe headache. Usually the other condition present is a neuropathic or neurotic constitution in cases that seem to be hysteric or solely due to ocular strain, or some toxemic state. He has frequently had cases in which headaches persisted, although the patient's vision had been corrected. Habitual headaches he regarded as being very difficult to deal with. In most of the cases of headache that Dr. Mills has been called upon to investigate he has been able to reach some conclusion; but there remain some that he has never been able to solve, and these are called habitual or constitutional headaches.

Dr. Theodore Diller, of Pittsburg, referring especially to Dr. Mayer's paper, said that he had seen a good many cases of constitutional headache, the patients having had their ears tested, their vision refracted, their blood examined, etc. These headaches are not of the type of migraine. The most reasonable explanation for them is that they are conditioned upon the make-up of the individual in some way, there being something wrong with the way in which the metabolism is performed. In one case Dr. Mills at first mistook a case of hysterical headache for one of brain tumor, the headache being the principal symptom. He related a case of a man who used to get a headache when certain kinds of annoying things happened, and thought that the headache in such cases is probably toxic and conditioned upon some vasomotor defect, the vasomotor apparatus being closely related to the emotions. Dr. Diller thinks that the element of exhaustion in the causation of headaches is not sufficiently realized.

The neurologist and the oculist have different points of view because they do not see the same kind of cases. It being generally known among the laity that headaches may come from eye-strain, persons usually consult an oculist first.

Dr. Barton H. Potts, Philadelphia, spoke with particular reference to Dr. Randall's paper, and said that formerly, if an ocular examination failed to account for the presence of headache, the patient was treated for some diathesis; but that now the nasal chamber comes under suspicion almost as soon as the eye. The anatomical relations of the nose and its accessory sinuses to the eye and the interior of the cranium make it easily understood how distension within these cavities may cause symptoms in those regions. In order to obtain pressure symptoms due to nasal inflammation, it is not necessary to have suppuration. The location of the headache does not indicate the site of the sinusitis. Congestion of the conjunctiva, ptosis, squint, edema of the eyelid, pain in the eye, and disturbance of vision should call for examination of the accessory sinuses, as well as for ocular examination.

Dr. Edward B. Heckel, Pittsburg, said that no symptom-complex will definitely diagnose any headache as being due to eye-strain or accessory sinusitis, or to be neurologic or general. Statistics are practically useless, because the neurologist gets cases from the neurological standpoint, and the ophthalmologist gets his from the ophthalmological standpoint, many coming directly, and not from general practice. Headache may be due to eye-strain, even after the presbyopic age. The oculist may correct an error of refraction without any relief to the headache. We can not look upon errors of refraction as purely mechanical processes, because so many elements enter into it that are not purely mechanical. Some persons with considerable errors of refraction are not conscious that they have eyes, while others with only slight errors suffer intense distress from eye-strain. All physicians and specialists should practice and work together. No one should think that he monopolizes any particular branch of medicine, but should be broad-minded enough to study all other branches.

Dr. L. Webster Fox, Philadelphia, said that he had no doubt that the ophthalmologist relieves more headaches than does almost any other of the specialists, because the correction of a quarter of a diopter of error will often cure a case of headache that has puzzled the general practitioner, as well as the nerve specialist. It is the same through the whole category of the various departments. This is an encouragement to hunt out the low errors of refraction. The Philadelphia school of treatment for low grades of refraction has a world-wide reputation, and quite recently a test-box has been made in which the eighth of diopters is used, instead of half or three-quarters.

Dr. S. Lewis Ziegler, Philadelphia, said that in some cases it is difficult to decide whether the error lies altogether in the eyes or whether it lies in the nose. The upper air chambers are hydrostatic areas. If there is the slightest impingement of contact-pressure, there is liable to be just as much reflex as we should get from the ocular reflex. We should be very careful in our differential diagnosis, and most carefully scan all the symptoms. We can not depend entirely on any one symptom or on any one organ as being the sole cause of the whole trouble.

Dr. Taylor mentioned a case in which a high degree of astigmatism was corrected without relief to the severe headache from which the patient suffered. The turbinate was then found to be pressing, and a large portion of it was removed. This, in connection with the glasses, which it was still necessary for her to wear, afforded great relief.

Dr. Risley, closing, said that in his paper he had stated that one must approach the study of headache from the standpoint of the ophthalmologist with a feeling of great conservatism. The man either is without experience or is not thoughtful that claims that all headaches are due to eye-strain or any other one conceivable cause. Dr. Risley said that the vast majority of the persons that had consulted him for headache had done so at the instance of their family physicians or at the request of a neurologist; and, after having been treated with all the acumen of the scientific doctor, their headaches still persisted. He felt sure that many so-called habit-headaches are eye-strain-headaches, because certain ocular conditions set up headaches that are incurable. Their anatomic effects are of such a complex nature, owing to abnormalities in the shape of the skull leading to an irregular attachment of the ocular muscles that they are essentially incurable and may be the cause of headache. Any individual that has had a more or less chronic disease of the sinuses in the anterior section of the skull is never a well man. This may be another source of habitual headache. The chronic manifestations of diseases, such as gout, syphilis, rheumatism and diabetes, may lead to disease in the uveal tract, and the eye may thus be the direct cause of the headache, because of the participation of the uveal tract in the general disease.

Dr. Mayer, closing, said that Dr. Risley's position, as reiterated in his closing remarks, is so conservative that the neurologist could not but agree with him: but that there are some divergences in his (Dr. Mayer's) conception of the matter from that of Dr. Risley. It is that the ocular condition, which may be present as the result of some constitutional condition, is not the direct cause of the headache, but an indirect cause; just as the headache is an indirect symptom of the constitutional condition. The headache is the prominent symptom of many defects in the neurotic make-up; and, as Dr. Wilson brought out, headache is sometimes not merely the symptom, but the whole disease. It is often the only symptom in neurasthenia. No matter what the cause of habitual headache, there are many cases that we can not relieve. We are sure that they must be general metabolic disturbances; but we can not, with our present knowledge, arrive at a way of changing the metabolic conditions.

Dr. Wilson, closing, said that he was glad to have had the opportunity of getting into the inner circle of the rhinologists and the oculists, an unusual privilege for a general practitioner; and that he had learned things interesting and suggestive, and some altogether new. These he would be able to think of with pleasure and also to good purpose.

Dr. Randall, closing, remarked that it is one of the great advantages of the Royal Ophthalmological Society that medical men, not to speak of the neurological men, not only at times are present, but also are as much members as are the ophthalmologists; and their work has been of the highest importance to the society and the profession. It is to be desired that in these special meetings of the Pennsylvania State Society the medical men and the general surgeons should occasionally take part in the discussions. The point in his paper on which Dr. Randall wished to lay particular stress was that there is no sense in teaching physical diagnosis as being of one kind or scope. It embraces the ophthalmoscope as much as the stethoscope, and the laryngoscope as much as either of the others. In the University of Pennsylvania, the physical laboratory is where the men are taught the study of the eye and the ear. The examination and diagnosis of these conditions should be within the field of every medical man that is properly educated.

Vernal Conjunctivitis.

By Dr. L. Webster Fox, Philadelphia. The peculiar characteristic of this affection is its tendency to return promptly each year for many years. It appears with the first warm days of spring, and lasts for weeks, disappearing when there is a drop in temperature. No pain is experienced, but excessive itching is the most prominent symptom. It is believed to be sporadic and non-contagious. Regarding treatment, the author had tried many remedies with very discouraging results. Finally, he resorted to the operation for granular lids, which he performed in a number of cases with a good deal of success. He believes that it is the only method that will afford permanent relief and cure.

DISCUSSION.

Dr. S. Lewis Ziegler, Philadelphia, said that the etiology of the condition must be looked for in physiological chemistry. Some irritative chemical is being eliminated through the mucous membrane, in that way irritating the lymphatics. The fact that acetic acid in dilute solution gives some relief shows that this chemical disturbance is a real one. Electrolysis has been known to give relief, and Dr. Ziegler has had some success with the galvanocautery. The internal administration of the extract of thyroid seems to have a modifying influence. It is possible that the influence it has on metabolism is conveyed to the blood, and in that way ameliorates the symptoms.

Dr. William Zentmayer, Philadelphia, has had favorable results in such cases from the use of the x-ray. In two cases, three years have passed without any recurrence. Salicylic acid is found to relieve the itching.

Dr. Klinedinst said that he had always believed vernal conjunctivitis to be due to intestinal disturbance and the absorption of some toxin, as the few patients he has had complained of sluggish bowels. He has used a combination of carbolic acid and adrenalin in normal salt solution. The carbolic acid allays the itching, and the adrenalin constricts the blood vessels. The normal salt solution seems to have some mysterious effect, perhaps due to absorption or to stimulation of the lymph tract.

Dr. William C. Posey, Philadelphia, said he did not believe in the operation of grattage in vernal conjunctivitis, but only in that rare form of conjunctivitis in which there are large granulations covering the upper and lower lids. The lids can not be rolled in such cases. In some instances, Dr. Posey has found it necessary to pare the granulations down with a cataract-knife. He can not see any reason for operating on a case in which a mere change in the weather will clear up the condition. The operation produces cicatrices, which may cause permanent trouble. When treated properly, vernal conjunctivitis will gradually disappear.

Cosmetic Eye Surgery.

By Dr. William Campbell Posey, Philadelphia. All operations performed upon the eye may be said to be, in a sense, cosmetic; for whether the operation is done with the purpose of increasing vision or is directed to restoring the normal contour and position of the lids, the appearance of the patient is affected. Plastic surgery about the lids is considered, as well as operations for the restoration of the eyelids; and several cases are reported. The correction of strabismus by tenotomy and by advancement of the ocular muscles is then taken up, the photographs of several cases illustrating results being exhibited. The removal of maculæ by tattooing and an operation for the correction of coloboma of the lid are considered.

DISCUSSION.

Dr. Clarence A. Veasey, Philadelphia, said that in some instances of exceedingly bad deformities from burns satisfactory results have been obtained by massaging the cicatricial tissue daily for several weeks or months with some oily preparation. This will sometimes soften the tissues sufficiently to permit of the making of a pedicled flap. In his experience, the so-called Lefort-Wolfe flaps do shrink considerably, and must be cut at least one-third longer than the space to be covered. For squint he does a complete tenotomy, with or without advancement of the opposing muscles, according to the degree of deviation of the eyes, the amount of visual acuity in each, and the variety of squint that the patient presents. In some patients whose eyes are deviating, he performs Todd's tendon-tucking operation. In divergent strabismus, advancement must usually be combined with tenotomy. In vertical strabismus, tenotomy or advancement is employed, according to whether the muscle is overacting or underacting. Local anesthesia is preferable, so as to be able to see the effect obtained as the operation proceeds.

Dr. Posey, closing, said that we should aim to correct every case of strabismus, even when nothing can be done to improve the vision in the squinting eye.

Congenital Dacryocystitis.

By Dr. William Zentmayer, Philadelphia. This condition is often mistaken for gonococcic infection. The symptoms are not always present at birth, but appear within a few days afterward. The condition is usually unilateral, and is due to an arrest of development in the tear-duct. Pressure will sometimes expel the contents of the sac into the nasal chamber, and the diagnosis will not be cleared up. Should it fail, however, or should the case be seen only when dacryocystitis has been formed, a probe should be inserted into the canaliculus and passed into the lacrimonasal canal with the floor of the nose has been reached. Four cases are reported by the author.

DISCUSSION.

Dr. George M. Marshall said that the fact that the condition can be cured by simple pressure or with a probe, without stretching, leads him to think that the trouble is mechanical, of a foreign-body character, rather than due to tissues having a vital support. He does not believe the underlying cause to be an arrest of development of the tear duct, but would rather say that Nature in these cases had failed to complete her toilet.

Dr. J. Ferdinand Klinedinst, York, had seen but one case of obstruction of the tear duct in a new-born child. It had not gone on to the formation of any mass, and was cured by the use of boric acid solution. In a case like Dr. Zentmayer's, he would hesitate to pass a probe for fear of tearing or overstretching the lacrimal canal.

Dr. William C. Posey, Philadelphia, said that he, too, would prefer to see, first, what could be accomplished by syringing out the lacrimal passages. No serious consequences had followed the passage of the probe in any of the cases Dr. Posey had seen, but the cure was somewhat more tardy than when after syringing. The prognosis in all affections of the lacrimal passages in children is much better than in adults.

Dr. Zentmayer, closing, said, in regard to Dr. Marshall's comment, that it all depends whether the deficient part of Nature's toilet is not in the development. The use of the probe requires some deftness, but the danger of injury is very slight with ordinary care.

Dr. Posey exhibited a picture of a similar case.

Injuries of the Eye by Foreign Bodies.

By Dr. William M. Sweet, Philadelphia. Dr. Sweet dwelt upon the importance of early diagnosis and extraction of the metal. Of the several methods of determining the presence of a foreign body in the eye, he considered the *x*-rays the most valuable, as the radiographs indicate the size of the body and its position. He reported a total of 464 cases of ocular injury, of which 256 were shown to have a foreign body in the globe, 17 in the orbit and 3 in the eyelid. Of the 256 eyes that contained a foreign body, extraction of the body was successful in 193, with ultimate enucleation in 28; extraction failed in 22 cases, with enucleation in 12, and in 41 cases no attempt was made to remove the body, with enucleation in 20. The results as to vision showed: Eyes saved with useful vision, 29 per cent.; eyes lost, 28 per cent.; eyes saved with good light projection, in which serviceable vision could probably be secured by removing the existing cataract, 30 per cent.; eyes saved, but with poor light projection, 7 per cent.; eyeballs sightless and slightly shrunken, 6 per cent.

DISCUSSION.

Dr. Clarence P. Franklin, Philadelphia, said that, being on duty in connection with a small hospital located near several large manufacturing plants, he had had an opportunity to see a great many cases of foreign body in the eye, a certain proportion of which had caused penetrating wounds of the eyeball. He had found it best to use the magnet at once in these cases, and not to wait for localization by means of the *x*-ray, when there was reason to believe that the foreign body was a piece of steel or iron. By this means the eye was put at rest quickly. When this failed, the *x*-ray was resorted to. Dionin was found useful in cases in which there was a likelihood of lymph production. Though its action is severe, it was found that the greater the reaction the better was the result.

Dr. C. M. Harris, Johnstown, said that, being in a steel town, where they did not have men of the talent of Dr. Sweet in the use of the *x*-rays, he had been compelled to use the magnet in diagnosis. He thinks that when the foreign body is large the magnet may do a great deal of injury, and that even when it is small it may injure the eye if located in the posterior chamber. In regard to moving the foreign bodies, some were so firmly embedded that no response at all was obtained by the magnet.

Dr. G. R. S. Corson, Pottsville, said that he sees about twenty cases of injury to the eye from coal to one from metal. While the injuries from coal are more serious primarily than are those from metal, they are not so in the end. While the coal will cause more laceration and more contusion than will the metal, it will not penetrate so deeply. Dr. Corson does not use the magnet as a diagnostic instrument; he makes the diagnosis by means of the *x*-ray, or otherwise, first. Then, if it is metal, he removes it with the magnet. When the injuries are received while striking the coal with picks, one can not tell whether the foreign body is a piece of metal from the pick or a piece of coal.

Dr. Sweet, closing, said that very often cases come to Philadelphia for diagnosis months after the original injury, the physician having said that there was nothing in the eye. A foreign body that can not be removed with the magnet is discovered, and the eyeball has to be removed. This would not have been necessary had the diagnosis been made properly in the first place. Dr. Sweet did not think there is any excuse for a man in Philadelphia, where *x*-ray localization can be obtained, to use the magnet first. If a physician can not get *x*-ray localization, he is justified in using the magnet at once, if the wound is open. Otherwise he should not use the magnet until he knows the size and position of the foreign body. The *x*-ray is valueless in coal injuries, as the coal will not show in the radiograph.

Primary Sarcoma of the Iris, with Report of a case.

By Dr. Edward B. Heckel, Pittsburg. Read by title. Dr. Heckel had been present, but had to leave. Dr. W. C. Meanor, Pittsburg, exhibited the pictures.

Dr. Clarence A. Veasey, Philadelphia, showed a drawing of a case of primary sarcoma of the iris that he had seen over twenty years previously. He had removed it by iridectomy, extracting the lens. The patient obtained five-sixths vision, and there has been no recurrence. Drs. Wood and Pusey, of Chicago, claim that in all cases of primary sarcoma of the iris immediate enucleation should be performed, but Dr. Veasey does not agree with this view. When the ciliary border is not involved and none of the ocular structures have been affected, he would remove the growth by iridectomy.

Abcess of the Orbit.

By Dr. Wendell Reber, Philadelphia. The condition is infrequent and is usually secondary to extension of disease from one of the accessory sinuses. Sinus symptoms may or may not be frank in such cases. Two case histories were recited. One was an acute case, consecutive to an acute frontal sinusitis. The other followed upon chronic sinus disease, set up by a foreign body in the nasal fossa for three months. Operation was followed by cure in both cases.

DISCUSSION.

Dr. W. C. Meanor, Pittsburg, said that, owing to the infrequency of abscess of the orbit, oculists are all too negligent about having a thorough transillumination made.

Dr. Posey said that the diagnosis of the sinusitis that gives rise to abscess of the orbit is one of the most difficult things in ophthalmology. Frequently there are no nasal symptoms, and an examination of the nose is negative; and, on making an incision into the orbit and finding no dead bone in its wall, we are sure to say that the abscess can not be secondary to a sinusitis. This however, is not correct, for there may be an abscess of the orbit originating from the sinusitis, without the necessity of there being dead bone in the wall, the inflammatory matter coming through the dehiscence in the wall and through the vascular supply.

Dr. Howard F. Hansell, Philadelphia, gave the details of three cases of orbital cellulitis that had occurred in his practice. In the first, the affection commenced as an orbital cellulitis, advanced to a widespread erysipelas, and terminated in pneumonia. In the second case, it was impossible to say whether the purulent orbital cellulitis preceded the purulent meningitis or was secondary to it. Both these cases ended fatally. In the third, the usual signs of orbital cellulitis were present. Three incisions between the ball and the outer wall of the orbit were made, but no pus was obtained. Drainage was inserted, and the next day pus was found discharging from the orbit. No disturbance of the interior of the eye was shown by the ophthalmoscope. The lymph sheaths of the nerves and vessels in the fissure of the orbit, or the intervaginal space of the optic nerve, or even the veins, may be regarded as the path followed by the infective bacteria when erysipelas of the face or of the lids extends into the orbit and eventually leads to meningitis. Reversely, infection may spread into the orbit from the meninges along the optic nerve sheath to the sclera.

Dr. George E. de Schweinitz, Philadelphia, said that in orbital abscess the bacteria found may be the streptococcus, the staphylococcus, the pneumococcus and the influenza bacillus. What appears to be a pure streptococcic infection will often get well after operative measures, while in other cases there is permanent damage to sight, or even a fatal result. Recent work indicates that the streptococcus alone has a great many varieties or forms of attenuation in malignancy. Therefore, the fact that the organism is known to exist does not give a positive indication of the malignancy of an infection. This also shows why injections of antistreptococcic serum sometimes fail, for it may have been made from streptococci of a different quality. A good many of the pneumococci are modified forms of streptococci. This explains why in some instances an apparently bland recovery takes place; while in others, in which the same conditions appear to surround the patient, and the same operative procedure is undertaken, bad results follow. Dr. de Schweinitz said that it frequently happens that in cases of suspected sinusitis in which the rhinological reports are negative, the operation will disclose pus and the ethmoid will be found necrotic. Even in the absence of positive reports or in the presence of negative reports, the oculist has still a right to suspect the existence of sinusitis.

Dr. Reber, closing, said that recognition of sinus disease calls for the most highly developed technic; and rhinologists are ready to admit that the most searching examinations with negative results do not carry great weight. He was glad to hear of the recent work on the flora of the streptococcus, and thought that the same differences could be found in different varieties of the diphtheria bacillus. He had purposely omitted the bacteriological part of the subject in his paper, as it was impossible to arrive at any conclusion regarding the bacteria causing the condition in his two cases.

The Eye and the Pelvis.

By Dr. Clarence P. Franklin, Philadelphia. The interrelated conditions between ophthalmology and gynecology show that causes in one produce effects in the other. The cause may be in the pelvis and the effects in the eye. Menstruation makes most eye symptoms worse, and this shows the importance of considering the nervous conditions present at menstruation, if one would relieve the eye symptoms. Reproduction also affects the eye, and the menopause likewise produces associated symptoms in that organ. That glaucoma has a relation to the menopause was brought out by Drs. Hansell and Sweet, of Philadelphia. Headaches are not always due to the eye, but are often caused by pelvic conditions. A question to be considered is, What effect has the artificial menopause, brought about by the gynecologist in removing the ovaries, upon the eye in prematurely producing presbyopia?

DISCUSSION.

Dr. Wilmer Krusen, Philadelphia, said that he felt that the best interests of women patients would be forwarded by a combined action between the gynecologist and the ophthalmologist in treating such cases. They should be subjected to an ophthalmologic examination before being treated or operated upon by the gynecologist, so as to determine to what extent headache and nervous symptoms should be attributed to pelvic or to ocular disease. There is undoubtedly a direct relation between the eye and the pelvis. Dr. Krusen does not agree with Dr. Franklin that vertical headaches are entirely claimed by the gynecologist; for in text-books on gynecology it is stated that 90 to 95 out of every 100 women having pelvic disease have occipital headache. Those complaining of vertical or frontal headache should be referred to the oculist.

Dr. Reber said that the treatment of cases of ocular postoperative neuroses after abdominal operations calls for the wisdom of the serpent. It is astonishing how many persons that have been operated on for pelvic conditions are afterward referred to the ophthalmologist. There must be some reason for this. The treatment of such cases is usually unsatisfactory. Various explanations that do not explain have been suggested by ophthalmologists and gynecologists. It may be due to a peculiar storm in the sympathetic nervous system or some actual change, or to the fact that a pre-existing ocular defect has become magnified and now forces recognition.

Dr. Franklin, closing, said that the postoperative refractive condition had occurred to him to be due to the fact that a patient in a fairly healthy condition can overcome a certain amount of eye-strain; but that when a long convalescence from pelvic trouble lowers the tone of the patient's system, the ocular condition becomes uncovered. The same thing may be observed after recovery from typhoid fever or pneumonia. The patient in such circumstances is apt to place the blame for the eye symptoms upon the preceding disease.

The kidney condition is frequently a source of alarm to the gynecologist and the obstetrician, and probably the most alarming phase of it is the sudden loss of sight in eclampsia; but the fact that proper and quickly instituted obstetrical procedures will relieve the condition and prevent the taking place of changes in the retina proves that the alarm often felt is not well founded. The postoperative ocular neuroses are the bane of all that do eye work. They may be caused by the fact that the patient's attention has been centered upon herself through having had to undergo an operation.

The Treatment of Recent Injuries to the Eye by Penetrating Pieces of Steel.

By Dr. John B. Corser, Scranton. The only cases considered were those in which the injury had occurred less than twenty-four hours previously. The advantages of early overdelayed treatment were set forth, and the routine method used in locating and removing foreign bodies was described and the results were given. Such cases are very frequent in mining, manufacturing and railroading centers. The author made a plea for the more general use of localization apparatus and magnet by oculists living in the smaller cities and towns.

DISCUSSION.

Dr. George E. de Schweinitz, Philadelphia, remarked that to those oculists that live in large cities it is a fine thing to know that others living in smaller communities have taken up Dr. Sweet's method and use it.

Dr. Klinedinst stated that at one manufacturing place in York pneumatic tools are used, and that this causes small particles of steel to fly off and lodge in the eyes of the workmen. The injured men are frequently seen within an hour of the accident, and the magnet can then often be used advantageously in extracting these small pieces from the cornea, and sometimes from the anterior chamber. In some cases, the only alternative to this procedure would be to open the anterior chamber. A small magnet could be gotten by almost any oculist. The men were able to return to work remarkably soon after the extraction of the pieces of steel.

Dr. Posey said that even the men in large cities could profit by Dr. Corser's valuable remarks. It should be possible to have the *x*-ray examination made at once, without submitting the eye to the danger of infection. When a patient has to be sent out to have this examination made, he is always subject to that risk. If Dr. Corser's method were used by all, a great many more eyes would be saved.

Dr. Lewis H. Taylor, Wilkesbarre, stated that in his own city there is an *x*-ray apparatus in the hospital. He himself uses the magnet in his office, and in recent wounds it has been employed with much success.

Dr. Sweet said that his method of *x*-ray examination is quite easy to learn, and that several other men in Philadelphia can practice it as well as he. There is no reason why it should not be used in every city in the State. The cases should not have to be sent to Philadelphia. They come many weeks after the injury, so that the treatment is not of much benefit.

Dr. Hansell emphasized the necessity for promptness in the treatment of these serious cases. If the eye is not originally injured to such a degree that it is lost prompt action may save useful vision. For the encouragement of those that have no localization apparatus, Dr. Hansell stated that it is not essential in every case. When the diagnosis of a foreign body in the vitreous can be made with a degree of certainty, the application of the magnet to the wound made by the foreign body or to another wound made in the sclera will extract it.

Dr. Corser, closing, reiterated his belief that, unless the body is in view near the anterior chamber or to be observed in the vitreous, the localization apparatus should be used.

The Treatment of Ptosis.

By Dr. W. C. Meanor, Pittsburg. There are two forms of ptosis, congenital and acquired. In the latter, the prognosis is usually good, if the condition is not of long standing. It is commonly the result of paralysis of the third nerve, due to some specific condition. A thorough trial should first be made of constitutional treatment in the acquired form; but in the congenital, operation should at once be resorted to. Hess' operation is preferred by Dr. Meanor; but he modifies it somewhat by making three additional sutures, to hold the roughened lid-surfaces into position until firm union has taken place. The advantages of this operation are the ease with which it is performed, the small amount of pain or discomfort following it, and the short length of time the patient must be confined to the hospital.

DISCUSSION.

Dr. Sweet remarked that the point that seems uncertain is the fact of the stitches holding the lid to the frontalis muscle. There is very little deformity in the Hunt-Townley operation, if any.

Dr. Meanor, closing, said that the addition of the three sutures, which is the only new thing in his method, holds the lid up much better, and gives it a better chance to retain its attachment to the frontalis muscle. The earlier the operation is done the better.

The Treatment of Internal Inflammation by Diaphoresis.

By Dr. Howard F. Hansell, Philadelphia. The great value of treatment by means of a succession of active sweats in many inflammations of the eye, particularly those affecting the uveal coat, is one of the reasons for this paper, and another is its too frequent neglect by practitioners, notwithstanding the oft-repeated attention given to the subject by writers on ophthalmology. Its application is extensive, and includes both syphilitic and non-syphilitic diseases. In the former, a great adjunct is the contemporaneous use of mercury, which may be administered in greater amount and for a greater length of time than when given independently of the sweats. Diaphoresis may be secured without the aid of pilocarpin, or jaborandi, and is equally efficacious as when induced by that drug. Thus, the treatment is not subject to the adverse criticism of physicians who consider jaborandi dangerous. The method, described in detail, is by means of hot-water bottles, the electric lamp, blankets, and hot and cold drinks. Reference is made to the literature of the subject, and the writer reports briefly a few of his recent cases.

DISCUSSION.

Dr. Reber said that he had been in the habit of employing diaphoretics in general practice before taking up ophthalmologic work, and had not lost faith in them since. He is fond of mechanical measures, but not of the use of pilocarpin. The latter can be used in private houses, but the use of the former must be confined to institutions. We have an internal, as well as an external skin, and the pilocarpin affects both. The lymphatic system is stimulated; and, as it is entrusted with the carrying off of the products that it is desirable to dispose of in these cases, pilocarpin is particularly indicated. The heart's action should be carefully investigated before commencing the use of this treatment. The fact that one or two persons have died of edema of the lungs as the result of it shows that it must be properly managed. It is much more valuable in palsy than is any other method, and is particularly valuable in inflammation of the uveal tract. It may be combined with mercury and the iodids.

Dr. Harris, Johnstown, had been in the habit of employing diaphoresis in connection with alteratives, but had not had the courage to try it alone. If it will save the patient's life in uremic attacks, it ought to be effective in the lesser maladies. He uses the vapor bath cabinet in private houses situated at some distance from his office, so that he can not get there to give the pilocarpin injections. When the instructions are carefully followed, it works very well. It costs but five dollars, and may be rented for less. An ice-cap prevents cerebral congestion.

Dr. Ziegler, Philadelphia, said that he had long been an advocate of diaphoresis, and had also used the vapor bath cabinet in many instances. There is a newly invented apparatus known as the blanket. It covers the patient completely, and has a thermostat in connection with it. Any one of three different degrees of heat can be used, and the thermostat will not let the heat rise beyond the selected temperature. Pilocarpin, in addition to its action as a diaphoretic, is a lymphagogue, and it acts on the whole body. Its effect on the salivary glands is probably the most annoying result of its use. Notwithstanding its disadvantages, Dr. Ziegler believes in employing it.

Dr. de Schweinitz said that certain cases will react to pilocarpin that will not react to the vapor baths or other mechanical means of diaphoresis, there being some action of pilocarpin not yet fully understood. In full doses, it is a diaphoretic; in smaller doses, a lymphagogue, and in small doses, an active diuretic and alterative. In certain forms of chorioidal disease and certain conditions of the vitreous, small doses of pilocarpin have a distinct alterative and absorbent action, and it is probable that it has a specific action on the diseased membrane.

Notes and News.

(Personals and items of interest should be sent to Dr. Frank Brawley, 72 Madison St., Chicago.)

DR. R. H. DERBY, of the New York Eye and Ear Infirmary, is dead.

DR. CHAS. A. OLIVER, of Philadelphia, will spend the winter in California.

PROF. CARL HESS, of Würzburg, Germany, has just received the title of Aulic Counsellor.

DR. TSCHERNING, of Paris, is to deliver the first Thomas Young oration of the Optical Society of London.

DR. CHAS. P. SMALL has just returned from Europe and has opened his new office in the Reliance Building, Chicago.

PATIENTS to the number of 123,355 were treated during the year of 1906 at the Royal London Ophthalmic Hospital.

DR. JOHN O. MCREYNOLDS is professor of ophthalmology in the Southwestern University Medical College at Dallas, Texas.

DR. WM. H. WILDER, of Chicago, has entirely recovered from the effects of his recent operation and has resumed active practice.

MR. W. H. H. JESSUP, of London, England, who was recently seriously injured in an automobile accident, has entirely recovered.

DR. BENJAMIN B. GRIFFITH has been selected as eye, ear, nose and throat specialist on the attending staff of the Riverside Hospital, Paducah, Ky.

DR. WALTER S. SIMS will continue as superintendent of the Mississippi Institution for the Blind at Jackson, Miss., having withdrawn his resignation.

Dr. L. Webster Fox, of Philadelphia, has returned from his European trip. While abroad Dr. Fox spent most of his time in the various eye clinics.

Dr. S. Czapski, who invented the Zeiss corneal microscope, died recently. He was manager of the firm of Carl Zeiss, limited, Jena, Germany, at the time of his death.

Dr. Edwin C. Renaud and Dr. Barton Pitts, of St. Joseph, Mo., have been selected for ophthalmology and otology on the staff of State Hospital, No. 2, in St. Joseph.

Dr. Alfred N. Murray, Chicago, wishes to announce the removal of his office to Suite 1208, 72 Madison street, where his office hours will be from 10 a. m. to 4 p. m.

Dr. Gottlieb Jaesche died, August 9, at his home in Dorpat, after a prolonged illness. His name will be remembered in connection with plastic operations upon the eyelids.

Dr. Major H. Worthington, of Chicago, assistant eye surgeon of the Illinois Charitable Eye and Ear Infirmary, was married October 5 to Miss Amy L. Burton, of Batavia, Ill.

The Rev. Sydney R. Hodge, of the Wesleyan Mission in Hankow, China, is dead, at the age of 48 years. Mr. Hodge was deeply interested in eye work in connection with his mission.

The Memphis Hospital Medical College, Memphis, Tenn., opened its annual session on October 11. Among the faculty changes is the appointment of Dr. James L. Minor as professor of ophthalmology.

Dr. Henry C. Haden, clinical professor of diseases of the eye, nose and throat in the medical department of the University of Texas, at Galveston, has resigned and is to be succeeded by Dr. Seth M. Morris.

THE INDIANA STATE MEDICAL ASSOCIATION has started a monthly medical journal as its official organ. The journal will be edited by Dr. Albert E. Bulson, Jr., of Ft. Wayne, Ind., who is treasurer of the association.

THERE are to be two ophthalmological congresses held next year. The International Congress is to be held at Naples at Easter, and in August the Section of Ophthalmology of the International Congress of Medicine is to be held at Budapest.

MR. R. MARCUS GUNN was recently elected president of the Ophthalmological Society of the United Kingdom and entered upon his duties at the meeting in London, October 17, when he delivered an address on the history and development of the society.

PROF. W. ZEHENDER recently returned to Rostock in Mecklenberg, where he will resume the practice of ophthalmology. Professor Zehender is one of our oldest subscribers and certainly one of the oldest living ophthalmologists, as he is now 88½ years of age.

IN CELEBRATION of its tenth anniversary the Belgian Ophthalmological Society elected the following to honorary membership: DeLapersonne of Paris, Hirschberg of Berlin, Fuchs of Vienna. Leber of Heidelberg, Snellen, Sr., of Utrecht, and Duke Karl Theodor of Bavaria.

DR. F. PARK LEWIS, of Buffalo, presented the subject of ophthalmia neonatorum at the recent meeting of the American Public Health Association at Atlantic City, and a committee was appointed to cooperate with a committee from the American Medical Association in a greater effort to prevent this disease.

MR. SIMEON SNELL, Sheffield, England, was elected president of the British Medical Association at the recent meeting held in Exeter. It is unusual to find two ophthalmologists occupying the position of past president and president-elect of such an important organization as was the case at Exeter, Richard A. Reeve, of Toronto, Canada, being the retiring president. Among the foreign visitors were Prof. Landolt of Paris, Dr. Wendell Reber of Philadelphia, and Dr. H. Manning Fish of Chicago.

THE following passed the recent examination for positions on the staff of the Illinois Charitable Eye and Ear Infirmary: Eye surgeons, Frank A. Phillips, E. V. L. Brown, Wm. E. Gamble, Brown Pusey and Willis O. Nance, all of Chicago; assistant eye surgeons, Lewis K. Beck, Major H. Worthington and C. C. Clements, of Chicago, and Robert Van der Heydt, of Oak Park, Ill.

AT THE meeting of the American Public Health Association, held in Atlantic City September 30 to October 4, the problem of trachoma in Mexico was referred to by Dr. Augustin Chacon of Mexico City. He said that immigrants to Mexico had caused such a serious epidemic of trachoma that it is absolutely necessary for the government to adopt radical measures for the safety of the country.

THE IRISH OPTICAL ASSOCIATION threatens to found an institution for patients of limited means similar to the Royal Victoria Eye and Ear Hospital in Dublin. This is in retaliation for the action of the latter hospital board in designating a particular optician for their patients. As over 40,000 patients are treated yearly in this hospital, the business of supplying them with glasses is an important one.

THE LONDON COUNTY COUNCIL, in its effort to induce parents to provide suitable glasses and treatment for children with defective eyes, proposes to exclude the children having ocular defects from the schools and then prosecute the parents for failing to edúcate them. This seems rather a roundabout way of reaching the difficulty, but, as it is the way of the London County Council, it must, of necessity, be the correct procedure.

THE STATE DEPARTMENT OF HEALTH OF NEW YORK recently sent to each of the 446 incorporated villages in the state a complete set of forms with instructions for the examination of the eyes and ears of public school children. The work of examining the pupils is to be done by the teachers in cooperation with the local health officers. Records of the tests will be sent to the parents or guardians of all children and to the State Department of Health.

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